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A JOURNAL DEVOTED TO BEES, AND HONEY, AND HOME INTERESTS. ILLUSTRATED SEMI-MONTHLY Published by THE A. ROOT CO. Medina, Ohio. \$1.00 PER YEAR

VOL. XXVIII.

AUG. 1, 1900.

No. 15.



STRAWBERRIES seem to last longer than years ago. This year the first picking was June 4, and the last July 11—38 days. [Just so here.—ED.]

UNCLE LISHA, a man who has experimented so carefully as you have with queen-cell cups has surely tried transferring cocoons. Please tell us about it.

TO SECURE the best results in queen rearing, a colony must be strong enough to swarm, and honey must be coming in every day, either from the fields or by feeding. That's not original. Uncle Lisha said it (p. 572), but it's worth repeating. [Just so. You can not give that point too much prominence.—ED.]

TO FIND A QUEEN, separating combs so bees make a lost call, as on p. 575, works in this locality, but it takes a good many minutes. But I never tried the kind W. W. Case gives, to open the hive rather roughly, and I suspect that would hasten matters. You may be sure, Mr. Editor, it will give you more than an inkling in every case, if you wait long enough.

I SEE YOUR POINT, Mr. Editor, on p. 559, and it's a good one. Yes, if the bees preferred young larvæ, why didn't they start more of them at first, before they got so old? I don't know. That shows bad management, but it doesn't really prove that they preferred older larvæ, for the stubborn fact remains that they do not use too old larvæ if younger are present.

I HAVE A "CLOD" ready to throw at you, Chalon Fowls, if you don't show some good reason for imagining that selling candied honey "will mean lower prices for us all." Did C. F. Muth sell candied honey for less? If you had a monopoly of the liquid trade, would it lower your prices? [That is right, doctor. While you are about it, throw a clod at him for me. I had about used up all my clods, and was just getting ready to retreat.—ED.]

SURELY that was a very exceptional case of Mr. Swift that Bro. Doolittle mentions, where the bees of a swarm entered "half a dozen hives all at once, and nearly all of them were killed." I never knew of such a case before. I've often had a swarm enter a wrong hive, but not several, and the swarm was always kindly received. Of course, this does not refer to starvation swarms in spring, which may be killed.

MY EXPERIENCE does not tally with that of Bro. Doolittle about swarms with clipped queens entering wrong hives (p. 570). My hives stand in pairs, or groups of four, with 2 to 4 inches between hives; and when a returning swarm enters a wrong hive, 49 times out of 50 it is not the adjoining hive, but one 20 or 100 feet distant. I think generally, if not invariably, it is a hive where a swarm has returned a short time before, the noise they make attracting the later swarm.

CHALON FOWLS, it seems true that the larger part of C. F. Muth's honey was sold to manufacturers, but it doesn't clearly appear whether they took it solid or liquid; neither does it clearly appear from Fred's letter how much table honey was sold in the liquid form. I was wrong as to the actual amount of granulated honey sold, for Mr. Muth clearly carried the idea that the bulk of his customers demanded candied honey; but I suppose he meant the direct consumers, and not the grocers. He always argued that consumers could and should be educated to take granulated honey.

THE IDEA that bees build downward faster than sidewise is a good argument in favor of tall sections; but objectors may argue that, with square sections, that is just what is wanted, so that the bees will get ahead with their downward building, and fasten to the bottom while they are filling out to the sides. But bottom starters are the thing to secure that. [I do not quite understand your point. Is it not true that bees show a preference for building a long deep comb rather than a square one? and is it not true that they build on the bottom of the comb with more readiness than they would keep on building to fill out the corners of a square section?—ED.]

A. J. WRIGHT, p. 567, objects that the glue of fences will soften if accidentally left out in the wet. I've been studying the chances for such an accident, and think they would be about as great as for leaving one's watch out in the wet. But Mr. Wright is right in finding they are harder to clean, and some other people will find it out some day. [In all the thousands of fences we have sold, we never before, but once, knew an objection raised to the glue on account of its yielding to the influence of moisture or water.—ED.]

I CONJECTURE that your conjecture, Mr. Editor, p. 474, is a wee way wild (500 acres buckwheat to busy 100 colonies). Quinby estimates that an acre of buckwheat yields 25 lbs. a day. If that be correct, 12 acres would furnish 100 colonies 3 lbs. each; and 20 acres would give each colony 5 lbs. But 1000 acres would not keep 100 colonies busy in some places and in some seasons. [I based my estimate or guess on what I had actually seen on the buckwheat-fields of New York. In one place I think there were 100 colonies that actually had within their range of a mile and a half or two miles 500 acres of buckwheat; and yet within one bee-range there might be in some cases 5000 acres of buckwheat; but I doubt very much whether less than 500 acres would keep busy 100 colonies.—ED.]

PROF. COOK is urging in *American Bee Journal* the establishment of bee-keepers' exchanges, or possibly one grand bee-keepers' exchange, and things are pointing in that direction. On page 554 of GLEANINGS is an item that indicates that something in the line of an exchange is already established at Medina. It reads: "Parties who have not secured honey enough for their home market will do well to write us. Often we can refer you to some one near you who has honey to sell, or make you a shipment direct from some of our customers near you." Isn't the thing needed an organization in the same line to cover the entire country? [It has been our rule for years to help producers find a market, and we stand ready at all times to assist them in any way in our power. We can buy only a small portion of the honey that is offered us, while on the other hand we usually know where a market can be found for the honey.—ED.]

S. P. CULLEY makes a good argument with his "saliva" doctrine, and sets one to thinking (p. 567). It is true that a piece of pine gnawed by bees at the entrance is made yellow, more at some times than others, perhaps depending upon what the bees are working at. Do the bees slobber over what they bite? But the stick is always made yellow, never black. A white section in the middle of a super, if left on long enough, becomes black, never yellow. And if "licking by the bees" is what darkens, what business have the bees licking sections fully sealed? "The glossy blackness that once white combs gradually acquire," Cheshire says, comes from the "dejectamenta of the bowel" of the larva. Aside from the varnishing with propolis, I suspect that the chief darkening of white sections comes from the bees plastering over the surface bits of

dark wax brought up from the brood-combs. [I should like absolute proof that the saliva, or slobber, is really the substance that makes the sections yellow. Is it not possible that yellow pollen clinging to the bottom of their feet might cause the wood to be stained yellow instead of the saliva? See article by J. Steigel, in Pickings, this issue.—ED.]

GLOSSOMETERS of several patterns are in use in France, and I'm not sure but they measure bees' tongues with them without killing the bees. But I'm not going to help you about them, Mr. Editor, for I'm mad because you wouldn't help me when I had the fit on me. Now that the fit's on you, you can hunt up your own glossometers. But stir up Hasty. He worked on the short-tubed-clover question, and, I think, made considerable progress. [Since I have discovered the convenience and ease of measuring bees' tongues in the manner I explained in our last issue, under a strong magnifier, I can not see what any one wants of a glossometer. Of course, such an instrument would demonstrate just how far a bee could reach; but when the insect is dissected, and the tongue laid down on a micrometer rule, for the purpose of comparison this method is exactly as good as the other; that is to say, if all tongues are measured in the same way, then we can determine which of the several tongues measured is the longest. Yes, yes; by all means let us hear from Mr. Hasty. Let us gather all the information we can, and work at this problem from both points.—ED.]

EVIDENTLY, Mr. Editor, you don't get hold of the idea of my plan of dampening sections. You think it wouldn't be much faster to use my plan of putting 100 or 200 in a row. Bless your heart, I don't put any in a row at all. I just take a package as it comes from the factory, and, without taking out a section, wet the whole business at one fell swoop. I've told how, but I'll tell again. Take off one side of the package so as to expose the grooves, and see that the ends of the sections are chucked down solid together so that a drop of water let fall on a groove can run right down through the whole. Understand, as the package lies before you, the edges, not the sides, of the sections, are uppermost. Put a plug in a funnel that closes the opening entirely, except a groove at one side to let through a very small stream. Let the plug project downward, and be whittled down to a point. Take a tea-kettle of water *boiling hot*, pour it into the funnel and direct the stream along the line of grooves, moving just fast enough so that the hot water will run clear through. [Well, now, doctor, if you described your method I do not remember it; but your plan would not work with the tall sections, or sections not exactly square, for the reason that the manufacturers are not always as careful to put sections the same way in the box, and as a consequence one set of grooves might not register with the next set below. Then I should think, doctor, there would be some grooves of some sections that you would miss; and a few broken sections would more than pay for the extra trouble in making a thorough job of it.—ED.]



The cricket's lonesome chirp,
The quick descending sun,
Speak of the fall's approach—
The harvest labor done.
Fill up the hive, 'gainst Borean blast,
With summer's choicest stores;
Let not a moment go to waste
Ere winter locks our doors.



CANADIAN BEE JOURNAL.

In speaking of the coming convention at Chicago, the editor says:

The program will no doubt be an excellent one, besides the opportunity of visiting the great city; and we would recommend any of our readers who can take a holiday to themselves on the above dates not to miss going to the convention. Our brethren on the other side have always shown the warmest and kindest feeling toward Canadian visitors, and treated them with the greatest possible courtesy.

That has the right sound, and the good feeling between the people of Canada and the United States of the World should be regarded as a matter of course.



A gentleman at the Oxford convention said he had some honey that weighed 14 lbs. to the gallon. He thought he was giving too much for the money, so he thinned it down with water. The advice he got at Oxford convinced him he had not better do it again. If 11-lb. honey is worth 10 cts., I would very willingly give 20 for 14-lb. honey of the same kind. Density of extracted honey does not receive enough attention. When it can be kneaded into gum-drops a big boom awaits apiculture.



Among the other things that seem to anger bees, Mr. Morley Pettit says a toy windmill placed near their apiary last summer so enraged his "pets" that they flew about it and darted at the revolving fans. He says perspiration angers them, and hence sting-proof suits of clothes are objectionable, as they cause so much perspiration. He uses a complete suit of white cotton, with a bee-veil over a broad-rimmed straw hat tucked into the clothing far enough to stand out clear from the face. With a good smoker filled with rotten wood he feels reasonably safe from stings. He says, "Never allow horses to enter the apiary, for the bees will rush at them and sometimes sting them to death, even at night."



THE AUSTRALASIAN BEE-KEEPER.

Concerning the cause and cure of robbing, Mr. H. L. Jones, of Goodna, has this to say:

With all the virtues attributed to the bee, she, nevertheless, falls from grace in at least one respect, and that is in the utter disregard she displays for the good old maxim, "Honesty is the best policy." Her motto is to get honey honestly if she can, but to *get it*, and this disposition of hers to get it when none is to be obtained by honest quest is frequently the cause of much perplexity and vexation of spirit to the inexperienced. My troubles in this line have been as deep as any, and first obtruded themselves upon me when I found it

necessary to extract during times of scarcity of nectar, and was guileless enough to replace the combs in the hives at once after extracting. I know better now how to manage these things, and find that I can extract with impunity at any time, providing that I have a bee-proof honey-house, and return the extracted combs at dusk, so that the bees can have them cleaned up and every thing in apple-pie order before morning.

Carelessness in feeding, or in exposing sweets of any kind, is also often the source of an outbreak of robbing. But very few experiences, in an apiary of any size, with the robbing propensities thoroughly aroused, are required to induce the greatest care in the performance of any future operations that are necessary during a dearth of honey. Of the many remedies that I have tried in bad cases of robbing, carbolic acid has been the most successful. This acid emits an odor so obnoxious to the olfactory organs of the bee that only the legitimate occupants of the hive, with their strong attachment to home, will pass it, while the most persistent marauders are content to sniff it from afar. A weak mixture of the acid and water sprinkled at the entrance is often sufficient; but in very bad cases I find it a big advantage to throw a quantity of grass loosely at the entrance and sprinkle this occasionally with the mixture. Apart from the loss sustained through the plunder and murder of their own species another disagreeable result of the robbing mania is the persistency with which the demoralized bees attack every living object in the vicinity of the apiary, and the unfortunate attendant speedily finds himself a special target for the operations of their stinging apparatus.

Confirming the above the editor says:

I too can testify to the efficacy of carbolic acid in cases of robbing; and I think that, if once tried, no apiary will be without a bottle of it. . . . To use the acid solution conveniently I procure a tight-fitting cork and cut two slots in it lengthwise. This makes a good sprinkler of the bottle; for, by suddenly inverting it, several drops of acid are thrown out, and by a simple swing of the inverted bottle the acid can be directed to any spot. When bees get to making a target of the bee-keeper he should wear a black hat, as they will strike it every time.



DISCOLORATION OF COMB.

The following unique if not interesting article on travel-stain came to my notice in a French bee-journal. I am very sure they credited it to the *Leipziger Bienenzeitung*, a German paper. Being struck with what seemed to me to be some good reasoning I translated it for this department, and give it for what it is worth.

The illustrious Huber, that passionate friend of bees, was blind. There are blind people to-day—not in body, but in mind, among bee-keepers who pretend to be masters of apiculture. It is true, it is not always easy to see, and I have often had that experience myself. How many things I have witnessed every day, and yet have not been able to understand them until by chance my eyes were opened! Thus it was that for a long time I was unable to explain the color-stains in wax. No bee-keeper, even among the most experienced, has been able to give me the true reason.

We notice the sheets made by a prime swarm during the first days. They are entirely white, while by autumn they will have become yellow or even brown. Evidently, this coloring of the wax is due to an outside cause. The new frames in which there was brood are brown while those that contain honey or which are empty are yellow. We see likewise some white frames, others which have become partly yellow, and others show here and there only a few stains of various tints. From this we may conclude the coloration of wax is not made all at once but partially. That brings to mind the erroneous old doctrine that the yellow color of wax is due to the breath of the bees or to the color of the pollen. Have the bees, then, eaten nothing but yellow or white pollen? To this question every bee-keeper will say no. For me the bees gather pollen of various colors, which should, according to Dr. Planta, give even a noxious wax, and not simply a white or yellow wax. It is useless to claim that.

Let us take several yellow frames and expose them to the light; then we shall be convinced that the wax is not uniformly yellow, but that some parts are dark-

er than others, some being of a deep orange color. The frames which have become yellow have, then, been the last to take this color, and, consequently, it is not the pollen consumed by the bees that has given this color to the frames. We can make these experiments every time we open a hive. We shall be convinced at the same time that the interior of the hive, the frames especially, in the cracks and angles, will be more or less yellow. The cause of the coloring of the wood is the same as for the stain in the wax. This cause was unknown when, happily, in 1890, I was fortunate enough to find the natural and complete explanation of it.

In summer, at the height of the brood-rearing season we see many bees running around on the ground in front of the hives. These are, for the greater part, old bees, which, being aware of their incapacity, have voluntarily abandoned their hives. There are some old bees and some young ones, some outwardly all right, and the others infirm. Let us take a few and examine them closely. We will take, preferably, those that are gray, quite hairy, having the abdomen separate, and really seeming to be cut in two in the middle. Others will have the abdomen fully rounded out, and between the rings a faint yellow tint. The latter will serve for our experiments. Let us take one of these bees, seizing it by its lower extremity, when there will issue from it quite a long thread of a beautiful yellow color, emitting a mild perfume. This stuff colors the hands, paper, wood, etc., with a fixed oily appearance. Throw this stuff into water and it will be found to give to it only a faint yellowish cast, and it will spread out into sinuosities, while in good alcohol it readily dissolves. If we warm a certain quantity of this substance, and press it between two sheets of paper, it will leave a greasy spot.

This yellow matter contains, then, considerable wax. But if we take for our experiments an old bee, the liquid obtained will be dark brown and of a sickening odor. This is the ordinary secretion of old bees, while the odoriferous yellow liquid is the first evacuation of the young bees. The yellow color of these excreta is identical to that of the wood of the hives. The drones do not have this matter to any appreciable extent—at least I have never been able to find any of it on them. During swarming, the bees already excrete these substances, traces of which we find on the leaves of trees and on our clothes. In this case they always retain the wax, which serves them for making their first comb. Hence it comes that swarms build white comb. The young workers of old colonies deposit their yellow color either on the empty frames, which, in consequence, become gradually yellow, or on the walls of their hives; and for this purpose they seek with special eagerness the cracks and points. At times they use simultaneously this matter with the wax, and then they build yellow.

As the bees seek to throw aside these excrementitious matters, must we not therefore conclude that the latter, while not exactly noxious, are entirely useless in the economy of the hive? What effects do these substances have on the human body? I do not know; but I am led to believe, from some indications, that their action on it is not favorable. What, then, may be the chemical composition of this yellow color in wax? The English professor, Hofstison, says that butterflies, on leaving their cocoon, leave behind a few drops of uric acid after they have colored their wings yellow. From this I should be inclined to believe that the yellow color of wax, which at first is the same as that of yellow butterflies, is due to uric acid. That is my opinion. I believe it to be correct, and shall maintain it, even though it may seem repugnant to others.

J. STEIGEL.

BRITISH BEE JOURNAL.

A missionary from China reports the extraordinary death of five persons from eating honey. Those who only tasted the honey, which had an unusual appearance, sickened, suffering great pains in the stomach. Others who had eaten more died within two or three days.

Bees crossed once with the Caucasian species are said to work the red clover to great advantage, and distinguish themselves from others in this way.



CLIPPING QUEENS A LA JONES.

Introducing a Queen on a Caged Comb; an Experience with Bee-paralysis.

BY A. NORTON.

Dr. C. C. Miller :—Please answer this medley of things in GLEANINGS. I should like your ideas and those of friend Root on such as he thinks worth noticing. This is merely a little gathering-up of little experiences at different times. Speaking of the method of clipping recommended by the Australian correspondent in GLEANINGS last year, I tried the same on two queens. The first one, as soon as I had her legs between my thumb and finger, as per directions, began to twist herself around so vigorously that I began to fear for her safety; for she performed great feats of suppleness, and was bidding fair to twist her legs off, and I was afraid I had crippled her. I had to take her up again and place her more carefully so that she could not twist, her feet being held between more than the two fingers. I took up another queen to clip by this same method. As soon as I had picked her up by the wings, she curled up into a ball as if she had been stung. While I had been careful, I feared I had killed her. I put her on the palm of my hand and stirred her around considerably, but she did nothing but quiver as if in the last pangs of death. Finally I placed her back on the comb unclipped. She soon picked herself up and went about her business. A few days later I clipped her in my usual way, which is simply to place the scissors under her wings while walking on the combs, give a little clip with a steady, careful hand, and leave her unconscious, almost, of what has happened. I find no difficulty or danger in this method. Did you ever try it? Do your queens ever "play possum"?

Last season I placed a valuable queen in a colony but recently made queenless, caging her on the comb in a cage pressed into the comb. I had to take a tender new comb, which also was too thick, and projected too far. Next day on looking in I found that the cage had been dragged out of place by the adjacent frame—whether in putting in the previous day or in taking out this time I did not know. The comb was mashed, and the queen was not to be found. I searched thoroughly for her at sundry times for some two or three days, and then sent for another queen. A queen that I tried to introduce several days later was not accepted, and then I thought to look among some loose scraps of comb between the follower and the side of the hive. There I found the queen with one leg crippled, laying in the loose comb, a small guard of bees with her. She had been accepted after some apparent struggle following her sudden release after so short a confinement; had re-

treated to the side apartment at the outset, and there taken her abode with but a few of the bees. But she was welcomed in the main building when put there. Is it not strange how soon queens may be accepted, even when disturbed at times when we would expect them to be killed?

Anent your answer to "British Columbia," on p. 151 of *American Bee Journal*, I have tried similar methods, but have found them too cumbersome. Once I caged a queen that way with her attendant bees and hatching brood in a colony just queenless. I put wire cloth over a closed-end frame, making it bee proof; hence it was practically the same way that B. C. describes. The next day I found that the queen, like a little simpleton, had been too sociable and confiding with the outside bees. She had got on to the wire cloth facing them, and they had dragged her legs through between the meshes, and had held her in the grip of deathly determination till she was so exhausted and devoid of vitality that I had to kill her. Would not such an experience have caused some modification of your answer to B. C., or would you consider it only an exceptional case?

I had an experience with bee-paralysis last summer. The previous year a colony had it badly, and it lasted through the winter and spring, but disappeared in time for sage harvest in May, so they made some surplus. It did not reappear with those bees, but elsewhere. Colony No. 1, as I will call it, came down with paralysis in July with a young queen of their own rearing. The disease made much headway. Colony No. 2 began to show slight signs of it considerably later. They were not near each other. I destroyed the queen of No. 1 and gave them one I had got by mail. She never laid an egg, having probably been injured in the mails. After a time, No. 2 becoming steadily worse, I transferred queen from No. 2 to No. 1, to give a queen to No. 2 when she should arrive. But No. 1 continued to get worse. After some weeks I tried the experiment of putting chloride of lime in No. 1. It did no good, but two days later I found the queen dead in front of the hive, whether from paralysis or chloride of lime I did not know. When a new queen from elsewhere had been given No. 2, and her bees were beginning to hatch, the disease among the old ones had become so disastrous that I felt something must be done. I put an empty hive down on the stand, removing the old hive so that only such bees as could fly should get back to the stand. I took the hive with the weak bees thus separated, and fumigated it with sulphur. I then carefully hand-picked all that showed any signs of disease in the colony that had got back to the old stand, and put the remaining well ones back into the original hive. For a while I thought I had found the royal way to cure the trouble, but before long it was as bad as ever. Then, as I could not afford to risk the queen I had therein, I took all the combs out and again sulphur-smoked them, and gave them with the queen to a made-up colony of healthy bees. I found that the smoking didn't hurt the young bees

in the capped cells a particle. I also united the diseased bees of No. 2 and No. 1 in hive No. 1, and gave them a hybrid queen I didn't care about, just to experiment. The new colony in hive No. 2 never showed a trace of disease. The united ones continued to tremble and die off till the young bees had populated the hive. At this time they have been long free from any trace of trouble. Does this indicate that queens free from disease will clear a hive of trouble? Does it also indicate that a queen is not necessarily the one that perpetuates the trouble, since it disappeared from a hive with the old queen and appeared in two hives with young ones of their own rearing? Do you think it was necessary to have fumigated hive No. 2 before giving it and the queen to a made-up colony of healthy bees?

Monterey, Cal., Mar. 14.

[Dr. Miller replies:]

My first experience with the Jones plan of clipping was much like yours. I feared the queen would twist off a leg. You used more fingers, and succeeded; I used no more fingers, but more legs. I clipped a number in that way, and had no trouble so long as I held two legs between the thumb and finger.

Yes, I've tried clipping a wing while the queen was on the comb, but it was never a



USING THE COGGSHALL BEE-BRUSH.
See Editorials.

great success. The queen wouldn't hold still, and it didn't seem possible to control the amount of wing removed as when the queen was firmly held.

No, I never had a case of playing 'possum such as I have read about; and yet I have had what might be the same. In several cases a queen has caught a foot in her abdominal extremity, and seemed motionless while it was caught, but it never lasted any considerable time, and I'm not sure but I always pulled the foot loose.

A single instance such as you relate about the queen caged on a whole comb would not materially change my answer to "British Columbia." The plan of caging a queen on 4 square inches or more of comb has been successfully tried by numbers in a great many cases. It might happen in any such case that the bees would fasten upon a queen's legs and injure her, but such cases have not been reported as common, so that it need not be considered as a thing likely to occur in the plan so thoroughly tried. The only question is, would the bees treat a queen less kindly if caged on a whole comb? It seems to me that, the more room she has, the less danger of rough treatment. Still, there may be something about it that I don't understand, making the larger room more dangerous. Possibly I may have a chance to try it.

As to your questions about paralysis, I can give nothing more than a guess except to the one question about the queen perpetuating the disease. It seems pretty clearly shown that the queen does not *always* stand responsible for the disease, although I believe there is a general conviction that the removal of the queen is a step toward the removal of the disease. Whether a fresh queen will clear out the disease may be an unsettled question. I don't know how much good that fumigation did, but it may be worth further trial. It is an interesting item, that sulphuring did not destroy sealed brood. It is in line with the fact that full-grown wax-worms in brood-combs are not affected by very severe fumigation.

C. C. MILLER.

[Although Dr. Miller has covered the ground pretty thoroughly, as I am asked to give my comments I do so with pleasure. I have tried clipping queens by all the various methods recommended, including that described for holding the queen by the legs. I have succeeded in doing it by this plan, but have always been fearful that by a sudden nervous twitch I might let go, or might release one leg or two, so that the queen in her efforts to free herself would twist off those remaining. Taking it all in all, I greatly prefer this plan: As soon as I see the queen I grasp her by the wings with the right hand. While holding her securely I then grasp her between the thumb and fore finger of the left hand, by the shoulders. The thorax of a bee has a chitinous hardened covering, and there is no danger in handling the queen in that manner. While she is between the thumb and fore finger of the left hand I then, with a pair of scissors, clip her. It is true she may throw up a stray

leg, and a bungler might catch that leg with the scissors; but by passing the point carefully over the wings, and awaiting a favorable opportunity, the blades are brought together.

We have had queens get the cramps many and many a time, especially in caging for mailing. We put her in the cage, even though apparently nearly dead, and put in the attendants. Very shortly the "dead" queen will have come to life again, and be as lively as ever.

As to bee-paralysis, there has been proof advanced to show that the disease is constitutional, and resides in the queen. There has also been proof to show that even when the queen is removed the disease would go on just the same. The only rational way of treating bee-paralysis is to take all the colonies so affected and remove them to a new location a mile and a half from any other bees, and then remove the queen and give them another. But before doing so, shake all the bees in front of the entrance, in the grass. The sick ones will remain outside while the healthy ones will crawl in. After the queen is introduced, go over the combs ever so often, and hand-pick the sleek shiny bees off the combs. Once in a while give the colony a frame of hatching brood from a healthy colony. We have found this, that removing the queen and also removing the sick bees as fast as they show symptoms of the disease, at the same time giving hatching brood, will very often cure the worst cases. One writer recommends putting a healthy colony on the stand of the weak one, and the weak one on the stand of the healthy one. The result is that the healthy bees carry out the dead ones and the sick ones, and, according to the statement of the one who recommends this treatment, it effects a cure.—ED.]

BEE-LITERATURE.

An Experience in Canvassing; the Somerford Method of Forming Nuclei; Belgian Hares; other Side Issues in Connection with Bee-keeping.

BY W. A. H. GILSTRAP.

Some time ago I had some business to attend to in a locality where several bee-keepers reside, and concluded to try to supply them with some good literature. Armed with the latest A B C, and sample copies of GLEANINGS, I started out. Bee-keeper No. 1 will not buy reading-matter, so I could not do any thing with him.

No. 2 has no use (?) for bee-books and papers, for he has known a long time that those who farm in books can't farm in the ground. He accuses me of believing all I read, and he is determined not to be caught that way. He is a good neighbor, reads the *San Francisco Examiner*, and is happy.

No. 3 had lately bought a bee-book. I asked him the name of it, and he said it was Root's A B C of Bee Culture. When asked if he did not want a good paper published by the same firm he said he thought not, as his

time was so much taken up that he could read but little about bees. He examined GLEANINGS, and said it was a good paper, but asked me if the book was not worth more to him (a beginner). I told him that the paper would be worth more to me; but to one just commencing the business the book is worth more, as the information is more condensed, and it is easier to locate just what is wanted, and he could rest assured that he had the latest and best; but if he had time to read, it would certainly pay to have both. He concluded to read up in the book awhile, and then take GLEANINGS.

No. 4 cared little for the A B C book, but was captivated with GLEANINGS. Not having the dollar, he would not permit me to send in his subscription, but said he would subscribe when I went to transfer his bees (90 colonies). He has had bees probably eight or ten years, without any literature on the subject.

No. 5 has Newman's "Bees and Honey," and promised to take the A B C book later in the season, and very likely will do so.

No. 6 has a few cows and some chickens besides his bees. He is making money, and is too busy to read. My suggestion that he might accomplish much more if he would take some time to read did not shake his mossy back. The trouble is that he has very great faith in a neighbor, and gets his information from that source; he, in turn, gets his information mainly from his father, who reads, and that makes my friend's bee-lore pretty well strained.

But to give up without a single subscriber was too bad, so I concluded to make a final effort.

"You spoke," said I, "of dividing your bees. Here is a plan in this book which will probably be worth several times the price of the book to you this season." Then I read the Somerford method of increase to him. He was delighted. Then I told him how a friend varied the method, also my variation. Of course, when he heard me tell it he liked my plan better, and had me repeat it. Then my best efforts were used to convince him that all bee-keepers should read books which contained so much practical information. How many books did he buy? Nary a one.

Of course, apiarists are an intelligent lot of people. A footnote is almost in sight which tells what an immense amount of reading-matter has been sent from Medina, to say nothing of other publications. Please tell us how many never read, and only think occasionally. How long could a bank or railroad keep in business by such methods? When I go out canvassing for bee books or papers again it will be after my work at home is well caught up and the desire to be a philanthropist is quite strong.

But the writer never undertook any thing more popular than a Brosius pure-food-bill petition to our Congressman. Some would ask what the bill had to do with whisky. I replied that, when the Supreme Court of the United States decides that whisky is a food, it will certainly be governed by this law, if passed. Of course, a Californian could not resist

such argument, and nearly all signed. Two men without any business refused, also a farmer who smoked cigars, but can't afford catfish at eight cents a pound. You see, one whole man is generally made out of the same kind of stuff. The following letter explains itself, and also would indicate that those who say "petitions do no good" are mistaken:

W. A. H. Gilstrap:—I am in receipt of your petition relative to the Brosius Pure-food Bill. In reply I desire to thank you for calling this matter to my attention, and to state that it will have my careful attention and consideration. Trusting that if I can be of any service to you in any way you will not hesitate to command me. If you want anything, ask for it. I am
Yours very truly,
J. C. NEEDHAM.

THE SOMERFORD METHOD.

This splendid plan of increase is all right if you have a sufficient number of *best* queens. I am never so fortunate. It has been desirable for me to modify the plan in order to make rapid increase and properly improve stock. But it takes more time than to follow Mr. Somerford's method entirely.

The modification which suits me best is, first, to get queen-cells by the Alley, Doolittle, Hyde, or other good plans, from your *best* queen. Destroy as many of your *worst* queens as is necessary. When the brood is sealed, destroy all queen-cells of this inferior stock, and the following day form nuclei, using the cells from your choice stock, confining as Mr. Somerford directs. My best success has been where I stopped the hive-entrance with strips of old grain-sacks, but it is always convenient for me to liberate the bees if they fail to do so.

When the Somerford plan first came out in GLEANINGS I decided it was worth more to me than any article I ever saw in any bee-paper. Valuable trial has confirmed this view. So far as the record is public I had rather be a Somerford than a Dewey.

BELGIAN HARES.

What you say in your June 1st issue about this growing industry is quite interesting. Do not expect as rapid increase as page 431 would indicate. A limited experience with over thirty pure and graded Belgians convinced me that, where feed is rather cheap, they can be raised to an age of five months for a feed cost of 25 or 30 cents each. The feed was weighed. Of course, there is other cost. If they can get gilt-edged treatment they might pay well nearly any place; but some places are better adapted to making a large business of it than other localities would be. Perhaps they will eat any vegetable food that a cow or chicken will, if it is in good condition, and some milk is quite beneficial. It is a good business; but your last advice (p. 446) is good—"Go very cautiously."

The Belgian-hare industry combines well with bee-keeping. Why not have a rabbit corner in GLEANINGS? Chicken culture also combines well with bees. Why not start a chicken department also? Where climatic and other conditions favor, olive-raising dovetails much better with bees than either. Of course, it would not do to leave them out. Then would GLEANINGS be a bee-paper or a

general agricultural paper with a bee department?

Bee-keeping seems to work better in this country as a specialty, but not as an entirety—a sole occupation.

Grayson, Cal., June 21.

EVOLUTION OF THE HIVE QUESTION.

Arguments in Favor of Shallow Brood-chambers.

BY T. K. MASSIE.

In this fast day and age of the world—in this day of sharp competition—when we utilize the elements of nature and do a great amount of our work by steam and electricity, it becomes us to minimize the costs of all the items entering into our pursuits of life; and in bee-keeping, as in most other pursuits, the element of labor is the principal item of cost. With this idea in view the various inventors of hives have gone on from the box hive or straw skep to the present high state of perfection.

When I commenced keeping bees I bought two hives of a friend and bee-keeper of several years' experience in the business—his own invention. They were on the "long-idea" style, divided into three apartments of 10×12

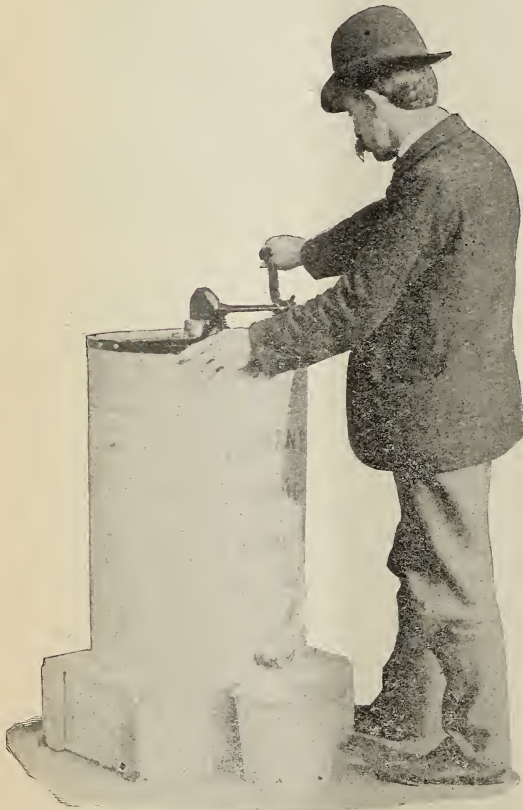
×12 deep. The middle apartment was intended for the brood, and the one at each end for a surplus storage. It is unnecessary for me to tell bee-keepers that the bees refused to "spread out laterally" and take possession of the end apartments, and fill with surplus. I very soon discarded them.

My next trial was the Simplicity hive with hanging frames with metal ends resting on tin rabbets. I found this hive a great improvement on my first hive, but not satisfactory. I tried the Dovetailed, Heddon, Conser, Johnson, and other hives, but was not yet satisfied. I then bought the Nonpareil (Dr. Tinker's) hive, which also had hanging frames. About this time the reversing fad was at its height, and I thought I saw great things to be accomplished with reversible frames. It looked all right, theoretically at least. I changed all my frames to closed reversible frames (I am still pleased with this change), supported by a wire from center of end-bars.

I began a close study of the hive and frame questions, having six cubical hives of my own invention made. But I soon discovered that the capped brood always lies *directly* on its back, head elevated just the pitch of the cells in the combs (can you, Mr. Editor, tell us what *degree* of elevation this pitch is?), and in reversing frames containing capped brood we threw the whole economy of the hive out of harmony by turning the brood with its back upward, head lowered just the pitch of the combs. I have never been able to determine the damage such changing of the natural order of the hive does to the colony of bees (can any one tell us?), but it is considerable. Reversing empty combs turns the pitch downward, and bees can scarcely store thin nectar in such combs. Then the only point left to be accomplished by reversing was to get the combs built solid to the bottom-bars.

But there is a better way to accomplish this. By using a thin and narrow bottom-bar, $\frac{1}{4} \times \frac{3}{4}$, and having our combs built above a set of combs in a good honey-flow, the bees build the comb solid to bottom-bars without any reversing. This is one reason why I use two brood-chambers of shallow frames to the hive. I would class any frame over $8\frac{1}{2}$ inches deep as a deep frame. By further investigation and study I found that bees winter better, and build up faster in the spring, in a box hive than in a frame hive, and this because they have deep combs and a hive ceiled up air-tight with propolis. Then we want a deep comb on which to winter our bees, and a shallow comb—a hive capable of being contracted to a shallow comb without the use of dummies or other loose parts, which requires extra care and labor to take care of and keep in place—over which to produce our surplus. The use of two brood-chambers with shallow frames is the only way I know by which the problem can be solved. A chaff or double-wall hive for outdoor wintering is necessary. It saves honey, and is better every way for the bees. They eat less in confinement, and hence are less likely to have diarrhea, but the chaff hive is too costly and cumbersome to handle.

The next improvement is along the line of a



EXTRACTOR ANCHORED FOR WORK.

See Editorials.

double-wall hive. The closed-end frame accomplishes part of this object. Besides, it is more pleasant to handle the closed-end frames. One can handle them by twos, threes, and fours, thus rendering the manipulation very rapid.

Tophet, W. Va.

[Closed-end frames are not nearly so bad to handle as one would imagine who has never tried them. As to reversing injuring brood, I don't take much stock in the idea. We have reversed hundreds of frames, and never could see that it did any harm.—Ed.]

SHALL WE WORK FOR LONG-TONGUED BEES OR SHORT-TUBED RED CLOVER?

What has been Done in Changing the Varieties of the Rose-Plant.

BY DR. C. C. MILLER.

There is no good reason why work should not be pushed with vigor in both directions. Suppose it should take ten years to secure the necessary increase in the length of tongue to work on ordinary red clover. It is probable that half that increase of length could be secured in much less than half the time necessary to secure the full length, for it is the extreme that costs effort. Probably in the first year could be gained as much as in the succeeding nine years, or, in other words, if the desired length could be obtained in ten years, half that length could be obtained in one year. Suppose, also, that ten years should be necessary to secure red-clover tubes sufficiently shortened for ordinary bees to work on, we might expect to secure half that shortening in one year. Now, instead of spending ten years upon one to the neglect of the other, put in the one year on both, and bring together your bees with tongues half lengthened, and your clover with tubes half shortened, and —*there you are.*

Of course, nothing is certain in any of these estimates. It might take twice ten years, or it might take only half of ten years to reach the desired result by working in only one direction. It might take more than one-tenth the time to reach the half-way point in either direction, or it might take less. The only point I am urging is that, of we modify both tongues and tubes, we *must* reach the point of getting red-clover honey in half the time we could get it by working alone at either tongues or tubes; and I suspect that one-tenth of the time comes nearer the truth than one-half. So, Mr Editor, don't let up in your enthusiasm for long tongues, and get switched off on the track of short tubes, but run the two parallel.

Another point I want to urge with equal emphasis—yes, with even *greater* emphasis. It is that this is to be the work of *all* rather than of a few. I do not undervalue the work of our scientists and our experiment stations. Blessings on them for what they have done and are doing. But this is a work in which the multitude can join. You have struck the

right chord, Mr. Editor, in saying, "In the meantime I hope our bee-keepers will be on the watch for red-clover heads with short tubes." As to both tongues and tubes, it is a matter rather more of finding than of making. The father of a lost child may die of old age before finding it if the search is left to him alone; but if all the world joins in the search he will soon have the child in his arms. In the matter of establishing a strain of short-tubed clover, the very first move is to find a plant with tubes at least a little shorter than those of its neighbors. Manifestly, two men on the watch will be more likely to succeed in finding this than one alone. A thousand giving a little attention to the matter will be better than one man spending his whole time in the search. Remember that variations in plants are things of freak. Florists secure new varieties of flowers by looking out for these freaks. A rose-plant, for example, will throw out a branch having roses different from the rest of the bush in some way, and this is called a sport. Or, the flowers may be the same, with a difference in growth of stock. Catherine Mermet is a popular pink tea-rose. One day a branch on a bush of that kind was noticed to bear roses that were pure white. Slips were taken from it and propagated, and now we find in all the catalogs "The Bride," the beautiful sport from Catherine Mermet. Agrippina is a Bengal rose bearing crimson roses in great abundance, the plant growing of usual height. In 1858 Rev James Sprunt found a branch of Agrippina shooting away above its fellows. Slips from this branch were taken, and now we have the climbing rose, James Sprunt.

So it is just among the possibilities—nay, even among the probabilities—that somewhere is growing to-day a sport among red-clover plants that is just what we want, and some one may find it where least expected. The point is that this thing must not be left to the scientists, but all of us common bee-keepers must have our eyes open, and no telling who will be the lucky finder. Probably, however, it will be by cultivation and selection that the goal will be reached; yet the first step must be the finding of something at least a little out of the common. You and I can find it just as well as the experiment station—yes, more readily—for there are more eyes belonging to us, and we can plant and pick out the best. I do not mean that our experiment-station men are not better adapted to the work than are we common bee-keepers. Perhaps one of them may do more than any hundred of us. They are trained for the work. But there are thousands of us; and as this is largely a matter of finding, numbers count.

What applies to clover applies also to bees. Differences in length of tongue exist now, and it will be easier to find the longest tongue if many engage in the search. If I understand the matter correctly, glossometers are constructed that are not expensive, and it requires no special skill to operate them. One can be inclosed over a colony so that no other bees can reach it, and the depth to which the liquid in the glossometer be noted. In this way all

the colonies in an apiary can be noted, and those with longest tongues used as breeders. If the longest tongues are chosen each year, please tell me why constant progress will not be made by *any one*. Please bear in mind that differences in length now exist, and that variations are of constant occurrence. All we are to do is to take advantage of the differences and the variations. When some one has made a successful find, let him divide up with the rest, getting a substantial return for his dividend. Mr. Editor, please announce the price of glossometers, and let us all go at the work. At the same time let us all be on the lookout for short-tubed clover.

For our encouragement we have the fact that there have been red-clover queens and red-clover bees. In general, a little is done by bees everywhere on red clover. A little effort ought to bring a little increase in the amount of red-clover honey secured, and united effort ought to bring entire success. It would be a shame to American enterprise if, within a short time, bee-keepers of this country do not succeed in bringing together tongues and tubes so that tons of honey now wasted may be taken. Shall we all help?

Marengo, Ill., July 21.

[Bee-keepers are apt to go by fads; and when the fad is on, they push it for all there is in it; but, unfortunately, before any practical results have been accomplished they too often sicken and tire of it (the new toy) just when new possibilities are almost within grasp. I do not know but this peculiarity, if we may style it such, is true of all human nature. But, as you say, it was E. E. Hasty who started this same idea in regard to short-tubed clovers, and at the time considerable enthusiasm was manifested; but the enthusiasm died out before anything practical was accomplished. For years, at different times, there has been a demand for long-tongued bees and bees all yellow. But the effort has all been expended on the last-named, and, pray tell, what have we got—beauty, with little else. If the same effort had been spent on long tongues, bee-keepers would now be getting tons of honey from red clover. Just read what Uncle Lisha says on this point in this issue.]

If any thing is to be accomplished in the way of getting tongues long enough to reach into the red clover we must *stick to this fad until we get something*. It will not do for us to assume that the "other fellow" will do it, and that we can buy the seed of short-tubed clover and the bees with long tongues. If, as you say, thousands will give a little attention to the matter, it will do more than one man spending all his time in the search.

Now about glossometers. I do not like to throw cold water on them, but somehow even now I can not take much stock in them. They are complicated and expensive. A far better way is to chloroform and decapitate the bees, spread their tongues on a micrometer scale measuring hundredths, and then count the hundredths off through a good magnifier. For *purposes of comparison*, this simple device will beat the best glossometer ever invented.

The little micrometer scales can be bought for 30 or 40 cents at any of the large hardware stores. If they can't be bought, we can furnish them at the latter figure by mail, post-paid, I think.—Ed.]

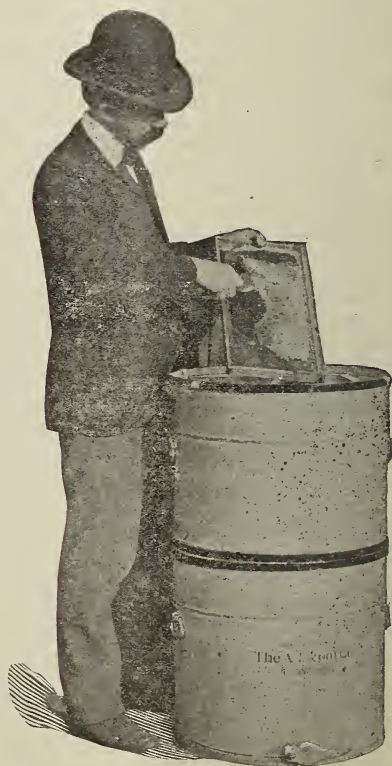
CAUSE OF GREASY CAPPINGS.

Some Good Evidence Showing that the Queen is Responsible: a New Kink in Queen-rearing.

BY C. RUSSELL.

I supposed it was generally understood that the queen (or, rather, her bees) was at fault in capping the honey close to give it the greasy appearance. But of late I have noticed a number of prominent writers attribute these greasy cappings to hot weather, a poor honey-flow, etc. I am aware that a colony which caps its honey close will make a poorer job when the honey-flow is light. Location may also have something to do in the case. But I think the main fault is in the strain. To make all plain, let me give a little experience of my own in this connection.

I have been in the bee business (not very extensively) for about twenty years. During that time I have bought perhaps thirty or forty queens, nearly all select breeders; and for twelve or fifteen years I have been very much



UNCAPPING WITH THE DADANT UNCAPPING-CAN. SEE EDITORIALS.

interested in getting and breeding the very finest stock—not the finest to look at, however, but the finest working stock—those that would give me the most honey; and as I produce nearly all comb, they *must* cap it white. I have had not only colonies but strains that I have never known to cap honey greasy. I will call it “close;” for all the difference I can see, one has an air-space under the capping, and the other has not.

In 1893 I bought a select breeder of a man by the name of Wallace—I presume the same man Mr. McIntyre bought his queen of as mentioned on p 12 of GLEANINGS. The first season I reared only four queens from the Wallace queen, as my old strain was good, and for three or four years I did not find their equal.

The next season the four colonies gave about 600 lbs. of comb honey; the best one 180 lbs., all capped very white, while the average for the whole yard was a little less than 100 lbs. per colony. Then I requeened nearly the whole yard from the old queen, and I never saw a greasy section from one of them. Then the next good year we had I took 6000 lbs. from 49 colonies of the above strain. I never knew what the colony with the old queen would do, as she was kept on five or six frames the three years I owned her. The way to test a queen is to rear a few young ones and see what they will do.

Three or four years later I bought another select breeder of the same man. I requested him to select me one whose workers were gentle and yellow, that showed just three good bands, and closed my letter by saying I would not take the best five-banded queen in the world as a gift. In due time I saw a few of her workers were five banded. But I reared fifteen or twenty queens from her for my own use. The next season nearly every one of those colonies capped its honey “greasy,” or close, while all from the first or Wallace queen (thirty colonies, perhaps) capped their honey white. Here were the two strains from the same man. It is needless to say I killed the last queen and all of her daughters.

Next I received a very fine breeder from Minnesota—imported strain. They were good honey-gatherers, but it was in the strain to cap their honey “close,” so I killed all the queens of that strain and replaced last season with thirty or forty granddaughters of the first Wallace queen. Besides these and two or three other strains I am testing, I have eight or ten of the “Hutchinson,” and if they equal some of the others I have I shall be more than satisfied.

HOW TO REAR GOOD QUEENS.

Most of my queens are reared in the Doolittle cups as described in his book; but the frame of cups is placed in the center of the brood-nest, as I think I get a finer lot of cells built this way than over the queen excluder. Unless the colony is preparing to swarm, or supersede its queen, the queens must be caged. When sections are on the hive I remove one and replace with an empty section with a hole through the top to drop the West cage with queen in. Cut off the projecting wire of cage

close to the coil, then use a long tin cover to keep from dropping through the hole in the section. For all those who do only a small business at queen-rearing and sometimes lack the royal jelly to start cells, one of the best ways is to prepare your frame of cell-cups, and into each cell put quite a large larva from any hive without food. This could be put in an extracting-hive, over the excluder, or in a strong queenless nucleus for 48 hours. Then remove larvæ from cells started, and replace with very small larvæ from your select queen. This will secure an extra amount of food in the cells, and they then will not remove the food they put in the cells as they do when we try to help them. By putting in some ourselves, some of the best queens I have ever owned have been reared, not excepting those from natural swarming. When we save the swarming-cells we are apt to save from too many colonies, and they are not likely to be all the equal of one we could select.

Another good method is to change the larvæ in the cells when we find a colony superseding its queen. These can be taken out soon after being capped, and they will immediately start others. The strength of the colony should be kept up by putting in frames of hatching brood. I have kept colonies rearing queens nearly the whole season in this way; but as a rule they have only a few cells at once.

Do you think this too much trouble to rear them? No: our surplus depends largely on the quality of our queens; and the little time it takes to rear them should be a secondary consideration.

Conesville, N. Y.

[Your idea of putting *large* larvæ in queen-cups and then replacing with younger is, I believe, new. I call the attention of other breeders to the kink. Perhaps there is something in it.—ED.]

FORM FOR NAILING FRAMES.

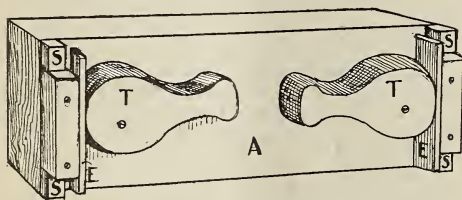
The Importance of Accuracy in Hive Stuff.

BY F. GREINER.

Exactness in the different working parts of the bee-hive has become of even more importance of late years than formerly. As the construction of the hives has become more and more complicated, so we have to exercise more and more care in making them. With the old ten-frame Langstroth hive of 30 years ago, and its swinging frames, a slight difference in the length or width or height did not amount to very much, and gave no trouble. The end-bars of the frame might have varied $\frac{1}{8}$ inch in thickness, and still no inconvenience would have been experienced. The supers—well, what of the supers? They were six pound boxes; and if they would only take the 5×6 glass they were all right, no matter how much they might vary otherwise. We calculated that $\frac{3}{8}$ inch, more or less, constituted the bee space. Now we have gotten that down to about $\frac{1}{4}$ inch and less. Generally speaking the hive has arrived at a point

where the difference of a part of $\frac{1}{8}$ inch might make endless trouble to the apiarist. It is now absolutely necessary that the lumber intended for hives be dressed very accurately. We who have been getting out our own hives, and are depending on the general run of the planing-mills for dressing our lumber, hardly know now what to do. We shall have to halve the corners of our hives in order to insure exactness of the inside dimensions, or perhaps give up making our hives altogether. The endwise-staple-spaced frame does not work well unless all hives in use are just right. Especially from end to end there must not be the slightest variation. And then in the brood-frames we shall have to have all infallible uniformity. In fact, there is scarcely any thing about the hive of to-day where carelessness in the making of it may be tolerated.

In getting out frame stuff year after year I find it is not an easy matter to have it just right every time (I speak here of the thickness only). However, if the frames are made up over a properly constructed form they will be all right. How to make and use such is the object of this article. My illustration below shows the form which I use for nailing my half-depth end-staple-spaced frames with $\frac{3}{8}$ -inch top-bars.



The end bars E E are already placed in position, the eccentric tighteners T T pressing them against the blocks B B, which are screwed and glued to the board or back A. This board or plank is gotten out as true as possible, all the wind taken out, and of proper width, which is equal to the length of the end-bar plus the thickness of the projecting part of the top-bar.

We are now ready to bring the top-bar to its place, the little blocks S S insuring the proper projections beyond the end-bars. On account of cheapness and effectiveness I prefer an all-nailed frame to one tenoned; and nailing through a $\frac{3}{8}$ top-bar into a $\frac{3}{8}$ end-bar a $1\frac{1}{4}$ wire nail (17 wire), particularly if cement-coated, answers the purpose perfectly. Four such nails secure the top-bar to the end-bars. We now turn the machine over so the top-bar is down; lay on the bottom-bar, and nail this with four one-inch nails. The frame may now be removed from the form after the tension of the tighteners is released by moving handles up or down as their position may require.

The machine need not be brought back to its original position to be ready for the next frame, but it works either side up, as is evident from its construction. All the difference is, in one case the handles of the tighteners have to be moved up to hold the end-bars securely; in the other case they have to be moved down.

Without going to the trouble of looking over old volumes of GLEANINGS I will say that, some 16 or 18 years ago, I gave a description and illustration of a similar form for nailing wide frames, a machine I still have in use. It differs from this one in so far as it has the tighteners outside of the frame instead of inside. In other words, one solid block, corresponding with the inside dimensions of the wide frame, is securely fastened to the back-board A, and the tighteners placed in such a manner as to enable one to hold the end-bars tight against this block while nailing on top and bottom bars. A machine constructed on this plan insures exact inside dimensions, which is the essential part in the construction of the wide frame and section-holder. With the endwise-staple-spaced frame the outside dimension is the most essential part.

I hope the above may be of some use to the bee-keeping fraternity.

Naples, N. Y.

THE HANDLING OF BEES.

Plain and Simple Directions for Beginners.

BY R. F. HOLTERMANN.

Formerly Editor of the Canadian Bee Journal.

In passing through the country, and coming in contact with bee-keepers, it will be found that very many are lamentably ignorant of the first operation of the bee-keeper. I refer to the proper way of handling bees. Many bee-keepers have their bees in a constant state of irritation, and, be it man or beast that comes in their vicinity, those bees are ready to attack. I know bee-keepers who, in handling bees, crush and injure them at every operation, and the bees are constantly on the defensive. Then the methods adopted are contrary to what they should be. A lady not long ago said to me, "What do you put on your hands when handling bees?"

"I put on wool mits, and the bees sting them very much." The same lady said, "I don't believe in brushing bees, as it kills them so much, and then they are all over the ground in every direction."

HOW TO PREVENT BEING STUNG.

The first step in the direction of preventing stinging is to get properly constructed hives. Bee-spaces in the hive should be properly constructed. Too little will result in crushing bees, as the parts of supers, frames, or sections are put in place. Take, for instance, a case where there is not sufficient room for a bee between the bottom-bar of the frame and the bottom-board. When the frame is put in place bees are crushed; or if there is not sufficient room between the super fixtures and the top-bar of the lower story, or in any other part of the hive. The foundation, then, of success is a well-constructed hive.

THE SMOKER.

Next comes a good smoker. I like a smoker large enough and with force enough to carry me through an emergency. Should the bees be quiet, very little smoke will answer; but

should a united attack be contemplated I want a smoker that will throw a dense smoke in a moment. A large smoker, and a good one, can be made to throw but little smoke when occasion offers; but a small ill-constructed smoker can not be made to throw rapidly dense volumes of smoke at a moment's notice. With many the extra price will not weigh very heavily when once they see the advantage of the better article. I do not believe in fuel which is so terribly pungent, a whiff of smoke being very distressing to the operator. I do not know, but I am inclined to think it angers the bees. Let the smoker fuel be dry. It is needless for me to say much upon this subject.

WHEN TO HANDLE.

Many fail to handle bees when they should be handled. It is a rare occurrence that bees require to be handled at unseasonable times. They should be flying freely, or the weather warm enough to permit them to do so. Disturbed during cold and perhaps damp weather, the bees are more likely to be irritable. If the operations can be postponed until the bees are gathering honey or pollen, so much the better; and if you want the greatest amount of profit from the bees, do not disturb them unnecessarily. One can get endless entertainment by sitting by the hive and watching bees going in and out, coming in loaded with the fruit of their labor, soon to hurry out again, and all in obedience to the divine law—no rebellion there; and then we can examine ourselves and see to what extent we are utilizing our own lives to carry out the purposes of God.

HOW CLOTHED.

Having now a good hive, a good smoker, and having chosen the proper time, let us look at the dress. This is of very great importance. The bees, as most of us know, do not like rough and fuzzy clothing. The hooks on their legs catch on the hairs, and irritate the bees. There are two classes to deal with—those keeping only one or at most a few colonies of bees, and those making to some extent a business of bee-keeping. The person keeping a few swarms can not well clothe himself specially. Many farmers wear woolen clothing. Their shirtsleeves, with the fuzz found on the surface, is to the bees like a red rag to an angry bull. To put on a coat does not better matters much. I have often noticed, with the open sleeves at the wrist the bees are much more likely to sting. The plan I adopted was to get print sleeves made with an elastic at the wrist, and another at the shoulder, fastening the sleeves at the shoulder with a hook and eye or a safety-pin. The elastic band can be kept well down on the wrist, and many a sting be prevented. The legs should be thoroughly protected and the bees have no way of getting under the covering. I have taken bicycle-clips, or even two ordinary strings (elastic would probably be better), and if I were a wheelman, or had knickerbockers, I would use a device on the same principle as the covering for the sleeves, for the bees could sting through the stockings, and the fuzz would also irritate.

A felt hat should never be used in the apiary. Take the smooth straw; and if you like to rip a portion of the broad rim, and sew it again to give it a more rounding-down shape, so much the better. It will protect more from the sun; and when no veil is worn, the bees are less likely to fly under the rim of the hat.

VEILS.

I have worked much among bees, with and without a veil; and, after carefully weighing my words, I would say it is folly to work among bees, when they are likely to sting, without a veil. The rules for clothing I have given are likely to give confidence to the operator, prevent nervous movements, the result of fear of being stung, and a steadier hand over the hive. Many veils sold are useless because too small. They draw the veil tightly over the nose, and the bees can attack this weak though prominent spot, or the veil comes loose about the neck, and the bee can get under. They should be long enough to allow of being well fastened about the neck, and at the same time not be tightly drawn about the face.

If the bee-keeper is a specialist, or likely to spend much time in the apiary, a pair of linen trousers will be found to be a decided advantage. They are free from roughness of any sort. To allow the hair to grow long is also a protection from stings. By "long" I mean long enough to prevent the bees from stinging through it, and protect the neck.

I have said nothing about a covering for the hands. I can not see any necessity for coverings for the hands. They must make it more difficult to operate, and I could not put up with such covering. If such is desired, extend the sleeves mentioned above so the thumb and fingers only are exposed; or, if more is required, use gloves with smooth surfaces.

THE OPERATION.

Thus equipped go to the hive and gently smoke it at the entrance—just a puff or two—and then remove the cover. Many go up to a hive, and the first thing the bees know the hive-stand or hive is rudely kicked against, or the cover and honey-board are as rudely disturbed, and the bees rush out to resent the attack. Think of a commercial traveler trying to get on the right side of a customer by introducing himself by means of a kick or a cuff! The result in both cases are somewhat similar, if natural inclinations are followed. The frames being exposed, instead of pulling out a frame, crushing bees on either side, gently crowd over adjoining frames; or if you have the closed-end frame, which is better, withdraw the follower, and begin operations, avoiding always the crushing of bees. A bee injured is angered. It throws off formic-acid odor, or, if able, may sting. In either case the other bees may be aroused and put on the defensive.

WHAT KIND OF BRUSH TO USE.

I am not prepared to say. A strong turkey feather or a wing answers very well, but there may be better. In brushing do not let the bees get between the comb and the brush and so crush them. Shove them ahead of the

brush with a gentle, quick, and firm hand, and brush the bees into the hive or at the entrance, not under your feet. After the honey season has closed I have avoided handling bees when they are not able to gather. After the honey-flow is over, leave them alone and they will settle down, and, so far as stinging goes, give but little trouble, when the whole neighborhood may be annoyed with cross bees if frequently handled during that time.

Leith, Ontario, Can.

[This article, by the former editor of the *Canadian Bee Journal*, a man who has also had much to do with bees, contains much valuable information, especially for the beginner; and even the expert, in comparing the methods of another expert with his own, will very often pick up some new ideas. So in this case.

Mr. Holtermann speaks of the fact that sleeves open at the wrists invite stings. I have noticed this many and many a time; and it is usually my practice to wear straw cuffs that fit tightly around the wrists, and slip over on the outside of the coat-sleeves, reaching back six or eight inches. But when I visited Mr. Cogshall I found he had a little better scheme yet, and that was long sleeves sewn to gloves with the fingers and thumbs cut off up close to the palms of the hands. This gives a free use of the fingers; and whenever the bees make an onslaught they are pretty apt to strike at the back of the hand protected by the glove, or further up on the glove or sleeve. Of all the painful places to receive stings, outside of the face, that spot is on the inside of the wrist near those veins that stand out so clearly just beneath the skin.

I quite agree with Mr. Holtermann, that a veil that is so scant in proportions that it hugs against one's nose is almost good for nothing. Outside of the eye, the most painful spot on one's physiognomy for the landing of a sting is on the end of one's nose; and when the facing of the veil hugs against that member the bees will very quickly see it and avail themselves of the opportunity.

Speaking of long hair reminds me that a beard is quite a protection. Whenever my veil is off, the bees are pretty apt to strike for my mouth, and either land in my mustache or chin whiskers where I soon make short work of them.

With regard to a brush, I think if our friend Holtermann had the Cogshall, as mentioned and described elsewhere in these columns, he would consider it the most handy for the bee-keeper, and the least offensive to the bees, of any thing ever devised. There is nothing furry or fuzzy about it—just an aggregation of long clean whisks that knock the bees off their feet and off the combs before they realize what has happened.

Mr. Holtermann is now preaching the word of God. We are all, I believe, glad to know that he still finds some time to think of his old friends, the bees. We wish him success in his new profession, his new kind of harvest—the grandest of all—the harvesting of souls.
—ED]



COLOR VERSUS UTILITY; BEES WITH LONG TONGUES; WHAT HAS BEEN AND MAY BE ACCOMPLISHED.

"Good morning, Whitty. When did you come over the mountain?"

"I came over the hill this morning, but found the going pretty hard. I noticed you have been writing in the bee-journal about improving bees. I guess it was GLEANINGS, though, and you have said hardly a word about color. I thought the real yellow bees a great deal better than the darker ones—the yellower the better. Of course, the yellower they are the purer they are."

"Well, no," I replied. "I haven't said any thing about developing color. The facts are, we already have quite enough color on our bees, and I am not sure but more than is desirable. What would you think of a man who was just starting in the dairy business to insist on buying only cows with black tongues and fawn-colored hair, without regard to other qualities? What would be the chance of his succeeding, do you think? I believe I am some like the boarder who found an unusual supply of hairs in his butter, and one day told his landlady that he had no objection to hairs, but would prefer to have them served on a separate dish. Now, I don't object to a bright-colored Italian bee; but if we must have a great deal of it, let us have it served on a separate dish. Let us have a breed for color. Let the skillful breeders keep on until the dark rings are crowded off the posterior end of the abdomen of the worker bees, as the white man crowds the Indian off a log, until they are gold from waist to tip. Such bees would be as useful as canary birds or poodle dogs—perhaps more so. They would be just the thing to show when we have company, or to brag about when other bee-keepers call to see us, or for the children to play with.

"A golden hive on a golden bank,
Where golden bees, by alchemical prank,
Do gather gold instead of honey,"

may be very poetical, but it is any thing but practical.

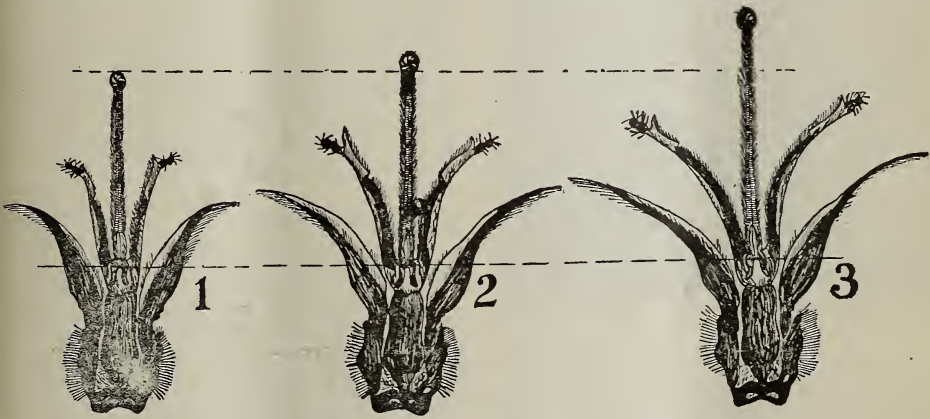
"After all, color has a real value if not in excess. By it we can readily tell how our queens have mated, whether with the drones of own choice stock or that of our neighbors' black or hybrid bees. But when a queen has so much yellow blood in her veins that she marks all her female progeny yellow without much regard to their male parentage, color ceases to be a virtue. Besides, it prevents queen-breeders from using some most desirable honey-gathering strains to keep their stock up where it should be. Of course, I am looking at it from the honey-producer's point of view. If I were a queen-breeder I might think differently; but it would not alter the facts."

"There, now," said Whitty, who is a rather quiet man, "I did not suppose I was going to

stir up a hornet's nest when I spoke of very yellow queens. I notice most of the queen-breeders advertise 'golden Italians,' as though the yellower the better, and somehow I had got it into my head that those queens that produce the very yellow workers were best. But there is another thing I wanted to talk with you about; and that is, if there is any show of our ever having bees that will gather honey from red clover—I mean as freely as bumblebees do. There is a good deal of red clover over in our valley."

Perhaps I spoke a little warmly on this subject. I replied, "But I have felt a good deal of regret that so much pains have been taken to breed for color with so few far more valuable points or traits of character. I have sometimes thought that the National Bee-keepers' Association could not do any thing more helpful to American bee-keepers than to pass, at their next meeting in Chicago, a resolution something like this:

careful attention to breeding is there any reason to doubt that bees can be produced with tongues sufficiently long to reach the honey of red clover? All that is needed is to breed with this object in view. The Michigan Experiment Station has reported some very interesting facts in this connection, showing that they have now a strain of Italian bees whose tongues are more than one and a third times the length of those of black bees, and one and a fifth times the length of the average Italian bees. I have asked my son to make a draft of them so we can see how they look on paper. It certainly looks hopeful. But we must not be content with simply increasing the length of the tongues of our bees. We must also decrease the length of the corolla of the red-clover blossom. And here is a nice job for some bright boy, and there will be money in it too. Go to the fields and watch till you find plants of red clover that the bees work on freely, then mark and secure the seed,



BEES' TONGUES; PROGRESS OF DEVELOPMENT.

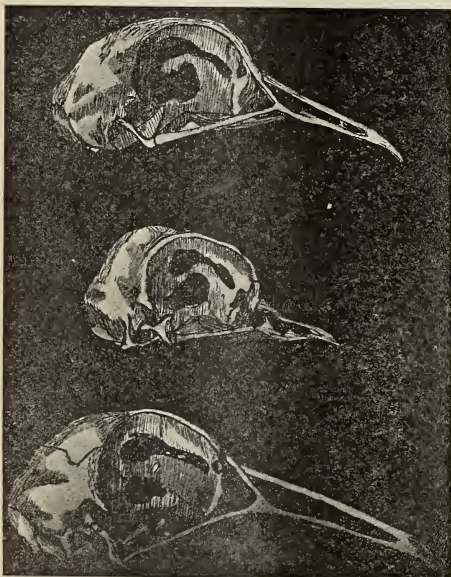
"*Resolved*, That we look with regret upon the efforts to breed high-colored bees, and deem three full bands of yellow on Italian worker bees as much color as necessary or desirable."

"Such a resolution would at least let the younger bee-keepers know what they thought of color, and establish a standard the same as the rules for grading honey, and at the same time give queen-breeders an opportunity to turn their attention to something of more value than color. The Ethiopian may not be able to change his skin, nor the leopard his spots; but we can all see how the American queen-breeder can change the color of a breed of bees. A few careful, thoughtful men have largely increased the production of honey by selecting and breeding from the strongest and most industrious colonies, and we have at least one well-authenticated instance where swarming has been reduced a half. Now, if swarming can be reduced a half by careful breeding in a few years, it can be reduced three-fourths and nine-tenths with the same care, and probably even more than that.

"If the color of bees can be changed, their industry increased, and their swarming instincts reduced a half, with a few years of

and sow and cross-fertilize by hand, and in a few years a variety of clover will be produced with blossoms not half the average length of those varieties now in general use. As soon as such a variety is produced, seed can be grown for market when the bee-keepers will fairly tumble over each other to get hold of it. But as it will be many years before such a variety will come into general use, let the good work go on in lengthening the tongue of our bees. All bee-keepers may do more or less by keeping a close watch for colonies that work on red clover, and breed from the queens of such for a series of years. There is little doubt in my mind that much might be done in this line. I shall be surprised if we do not find that those colonies that work best on white clover and basswood are not the same that take most kindly to red clover. Already several colonies have been reported in our bee-journals as working freely on red clover. I ran across some interesting cuts of the skeleton heads of pigeons the other day in an old book I was reading, that interested me very much, as they showed how changes may be brought about by selection. The upper head is that of the wild pigeon of western Europe.

The next is that of a tumbler, and the last that of a carrier pigeon. The two lower heads represent breeds that have descended from the wild type represented in the head above. One has a beak only about half, and the other once and a half as long as its ancestor's—a variation of nearly an inch. Now, if the beak of a bird can be changed by man, can not the tongues of bees be lengthened also?



PIGEON SKULLS.

"It is an interesting fact in this connection, that, while a great deal of attention has been given to improving hives and boxes, supers and sections, frames and foundation, and every thing connected with bees, more than eight hundred patents having been issued during the last twenty-seven years on such improvements alone, yet how little thought, comparatively, has been given to improving the bees themselves beyond that of color! It is true we have introduced a number of new breeds during the last forty years, each claimed to be better than any other. I think it is now generally conceded that the Italians are as good as any; still, some prefer black bees or black with a slight mixture of Italian blood. Yet one of their most marked characteristics is their variability, as I think any one who has bought queens from different sources will testify. Indeed, the Italians as imported seem to be a breed formed by nature or climate, without being improved in the least by the hand of man. While horses, cattle, sheep, hogs, dogs, fowls, and almost every thing domesticated by man, are being constantly improved, how little thought has been given to improving our bees by carefully selecting the best from which to rear our queens from year to year! Why should not a bee-keeper take as much interest in improving the productiveness of his bees as the flock-master does

his sheep, or the dairyman his cows? What would be thought of a man going into dairying who should build his barn with every modern improvement, and secure the most approved utensils, and then go out and buy his cows without regard to the quantity or quality of milk they would produce?"

"They would call him a fool over our side of the hill," said Whitty, "or something not much more complimentary."

How much more he would have said I don't know, for Esquire Fullam came along just then, driving a cow; and, hearing a few words about improved tools or utensils for dairying, began:

"That is so. One needs the best barns and apparatus for dairying, and ours is the first State to invent and adopt them. But then it is even more important to have improved cows. I have just sold this cow, and am driving her to the station, because last year she did not give me over two hundred and fifty pounds of butter. I tell you, our State is a great place for dairying when you have improved cows and apparatus, and all the conveniences. To-day the cattle are feeding upon a thousand hills, cropping the sweet green grass. I tell you, our State makes the highest-colored and finest flavored butter in the world. It is a good place to live in too. I tell you, we have a great State."

[I would explain that this article, or, rather, this series of articles, was written several months ago, and it appears that Uncle Lisha has preceded us in all the later developments which were given prominence in our last issue. Uncle Lisha offers us a good deal of encouragement. Now, then, we wait with special interest the report of the Michigan Experiment Station touching on the subject of the comparative lengths of bees' tongues. If there is a marked variation it certainly lies within our power to make the variations greater. Let the short tongues be where they are, but make the long tongues longer.—ED]



ITALIAN BEES, CARNIOLAN BEES, AND FOUL BROOD.

"Good morning, Mr. Doolittle. I came over this morning to have a little chat with you about three things which interest me much just now. The first is about the Italian bees which I read so much about. Will you please give me a description of this bee, as I do not see what I wish along this line in the bee-paper which I take?"

"Well, neighbor Jones, I hardly know what you wish under what you term as a 'description,' but I will venture to say that this bee belongs to one of the yellow varieties, to which also belong the Cyprians and Syrians."

"But I am told that the Cyprians are very vindictive and ugly. Is this so? And are the Italians ugly also?"

"As a rule, the Italians are very quiet and gentle, while, so far as my experience goes, the Cyprians are more given to stinging than any variety known. The Syrians are about half way between the two as to their stinging qualities—about like our common grade of hybrids."

"When were the Italians first brought to this country?"

"Italians were first shipped to this country about 1860, while the other two were not brought to our shores till about 1880."

"But are the Italians really a better bee than any others?"

"So far nearly all apiarists agree in placing the Italian bee at the head of all others, both as to ease of manipulation, beauty, and honey-gathering."

"How about comb-building? I read they fail here."

"As comb builders they are not quite as good as the black or German bee, neither do they use as much wax in capping their surplus honey, which gives their comb-honey product a little darker appearance, or what is termed a 'watery' look."

"You said something about ease in manipulation when working with these bees. What did you mean?"

"Italian bees cling very tenaciously to their combs, staying on them, when the combs are handled, very much in the same quiet way that they did when the combs were in the hive and the hive untouched, while the black and hybrid bees very often fall off, or run about in a frightened way. This tendency makes the handling of the frames and the finding of queens, or any other inspection of the inside of the hive and combs, very pleasant; but when we wish to get them off the combs for extracting the honey, or for any other purpose, it is more of a job than with the black or hybrid bees."

"But that would hardly pay for procuring queens of this variety, would it?"

"Well, perhaps not, though I incline to the opinion that it would. However, the main point of superiority in the Italian bee is its honey-gathering qualities. If there is any honey to be had they are away to the fields after it, and will toil incessantly all day for a very little, while the black bees will work very little unless honey can be gathered quite freely. To put it in other words, Italian bees will labor faithfully all day long for only pennies, while the German bees must have dimes, quarters, halves, or dollars if they do work to any amount."

"Can you prove this assertion in any way?"

"Let me illustrate, and then you can tell. I find in my diary that, in the spring of 1872, I had fifteen colonies of black bees and three of Italians. As an experiment a fourteen-quart pail of maple sap was placed in shallow dishes, after adding two pounds of sugar, so as to make a very thin sweet of the whole. With honey, the bees were started at work near this sap, and as long as the honey lasted

they came in about the proportion named above, fifteen of the black to three of the yellow. As soon as the honey was gone they took to the sap; but in a few minutes the black bees began to show less in proportion, and kept getting less, till at the end of an hour none but Italian bees were carrying the thin sweet. These Italian bees worked till they carried all of the sap home and had it evaporated down to the consistency of honey, while the black bees thought it not worthy of their notice."

"That is pretty good proof, sure. But what about the Carniolan bees?"

"They are natives of Carniola, and, if I am correct, they were imported into this country through Mr. Frank Benton when he was in the Old World looking up *Apis dorsata*. Soon after their importation there seemed to be a great difference of opinion regarding them. Some extolled them very highly as comb-builders and honey-gatherers, while many more could give no words in their favor."

"But, did you not try them?"

"Yes. During the season of 1885 I procured a queen, said to be as good a Carniolan queen as there was in this country. But from a careful inspection of them for months I could not think otherwise than that they were a very peaceable strain of the black bee. They were said to be of a steel-blue color; but a close observation, with the two side by side, failed to reveal such color further than the black bee shows it. All the mark of distinction I could see was in their being great swarmerers, while the blacks swarm only moderately."

"Did you have only this one trial of them?"

"Yes. I gave my experience with them, and some thought I did not have Carniolans in their purity, so offered to send me a queen on trial. I accepted, and had queens from three other parties; but the latter revealed nothing different, except that two of them were mixed with the yellow races."

"How about their honey-gathering qualities?"

"They proved so inferior that I finally superseded their queens with Italians. The main trouble seemed to be that, as soon as the honey harvest came on, they would go to breeding with 'double diligence,' and reared so much brood that the surplus gathered was consumed by the multitudinous brood. That others found them not so good as the Italians is proven by their having comparatively gone from notice, very few breeders of the present day offering them for sale."

"Now a question or two on foul brood and I will not bother you longer. Can you give me some of the symptoms, and also tell me how to cure it?"

"When a colony has this dreaded disease, a few of the larvæ die soon after the bees seal the cells containing them. The capping to the cell soon has a sunken appearance, generally with a small hole in the center. Upon opening the cell the larva is found stretched at full length, having a brown appearance, while all healthy larvæ or pupæ are white. If touched this dead brood is of a salvy, ropy nature, and gives off an offensive smell. From

the first few cells the disease spreads rapidly, should it be spring when the disease first appears, till the combs become a putrefying mass, generally during the first season, and nearly always during the second, the stench of which, at this stage, can be smelled a rod or two from the hive."

"Do not any of the larvæ perfect into bees?"

"Yes, at first the most of them perfect; but as the days go by, fewer and fewer of the larvæ develop into bees, so that the population of the hive decreases till they become an easy prey to robbers, when the infected honey is taken off by these robber bees, only to carry the seeds of the malady to the robbers' hive, for the disease is spread through the honey mainly. One drop of foul-broody honey going into a healthy colony dooms that colony from that very moment."

"That being the case, I hardly see how it can be cured at all."

"A careless person rarely cures this disease short of destroying his whole 'outfit' and beginning anew. But a careful, thorough-going man can cure it without losing all of his investment. The cure is to drive all of the bees from the affected hive, and keep them shut up until they shall have digested all of the diseased honey they carried with them in their honey-sacs. They are now hived and fed in a new clean hive, or the old one thoroughly cleansed by scalding, when they are free from the disease. Great care should always be taken that no bees get at the contents of the old hive before the combs are rendered into wax, and the honey and hive scalded."

"Is that the only remedy?"

"Other cures have been recommended, but most of them are ineffectual, except in the hands of an expert."



ALSIKE VS. RED CLOVER; THE INCREASE IN THE HAY CROP FROM GROWING THE TWO TOGETHER; A PRIZE ARTICLE CALLED FOR.

Mr. Root:—I was quite interested in what you have to say on page 537 regarding alsike and red clovers. You say, "It is a difficult undertaking to induce farmers to grow alsike clover in preference to the red;" and, again, "Farmers will grow red clover in preference to alsike." I know that you are correct in your statements as to the country in general; but are you sure that the average farmer understands the good points in alsike clover? and have we done any thing to bring this information home to him?

There are farmers in this State who make a business of growing alsike for seed crops, and they claim that the land could not be put to any better paying use. I know localities where farmers, as a rule, will not seed any

kind of meadow without alsike in it. If they seed to timothy and clover, it is alsike and timothy, which makes a heavy growth of the very finest quality of hay. If the meadow is to be all clover, it is half red or mammoth, and half alsike. This, they claim, increases greatly the amount of hay per acre, as the alsike, being finer, stools in between the larger clover, and one or the other makes a good after-growth. I am uncertain now which one it is. Alsike clover is a better self-propagator than red, and stands the moisture of low ground well. It seems to me that, while we are waiting for a race of long-tongued bees, we might profitably do something to increase the acreage of alsike on our respective fields. I will accept the long-tongued bee when it comes. But in the mean time I want some alsike sown near my apiaries if possible. I am not in one of those favored localities where every farmer sows alsike, but there are always a few patches near by. Why not have a prize article on the subject of alsike clover, bringing out its good points, and have it first printed in GLEANINGS and then copied in all the apicultural papers. There are a good many men in Wisconsin who could write intelligently on the subject. Mr. Wilcox, Mr. France, and myself could furnish the names of farmers who understand alsike.

HARRY LATHROP.

Browntown, Wis., July 14.

[We will gladly offer a prize of \$10.00 for the best article on the growing of red and alsike clover, and clovers in general, and \$5.00 for the second best. These articles are to be submitted to clover experts, and the one which is best will receive the prize of \$10.00, and the second best \$5.00. They should treat of the growing of clover, both alsike and red, and especially the question of growing alsike in connection with the red, and whether the growing of the two increases the hay crop. It is a very fruitful and important theme, and you have my thanks for the suggestion.—ED.]

GATHERING HONEY AND POLLEN BOTH ON THE SAME TRIP.

There was nothing in my letter to explain my reasons for believing bees carry honey and pollen on the same trip. I think it very easy to see the movements of bees on white clover. By watching them closely I could see them inserting their tongues into the little petals quite distinctly. The bees I was watching had pollen in their baskets; and by the movements of their legs they were still gathering more. I think, according to what I have seen, that bees gather pollen with their fore legs, and deposit it in their baskets also with their fore legs while flying. That is the reason why I am sure that bees do both on the same trip.

W. W. BROCKEMIER.

Sewickley, Pa., July 12.

[I can not say positively that you are wrong in your conclusions; but to me it does not appear you have offered indisputable proof that bees gather both honey and pollen at the same time. I see no reason why they should not do

so; but when we come to consider absolute proof, we may well look to our bearings. The only authority who seems to touch directly on this mooted question is Cheshire. On page 597 of his "Bees and Bee-keeping," Vol. II., in reference to pollen, he says:

It is gathered by bees, most generally, simultaneously with honey, and, although usually carried back to the pollen-basket of the third pair of legs, when on the wing, it may be duly stored without flying, as I have often noticed when bees gather from some composite flowers, such as single dahlias.

There, friend B., you have so good an authority as Cheshire to support your views. But even Cheshire has been found to be by no means infallible on several little points, and even he may be wrong.—ED.]

FLAX AS A HONEY-PLANT; HOW TO MAKE A SCRAPING-KNIFE.

Allow me to call your attention to flax as a honey-plant. There are several hundred acres close to me, just in bloom, and it furnishes the principal crop, except goldenrod, in the fall. My bees swarmed on the 23d of June. One colony came out on the 17th, 18th, and 20th, and did not cluster, but went back into the hive, and at last came out and was hived on the 23d. I have one super nearly full, and one about half. I have at present only 3 colonies. I use a knife which I use for scraping

sections. It is made of a common case-knife. Break off the end so it will be square, then grind it with a notch in the end as in diagram.

Marshall, Minn.

JESSE JENNINGS.

[A scraping-knife similar to what you show has been illustrated in our columns before. The principle of it is all right.—ED.]

ROUND SUPER SPRINGS; WHO FIRST INVENTED THEM?

In GLEANINGS for 1887, page 466, you will find a description and illustration of my super spring. On page 543 is something further on the same subject. While Mr. W. D. Wright (page 475, current volume) and others may have preceded me in the invention of such, I believe that I was first in giving the super spring to the public. I care, however, very little for priority. The main thing is that any spring which accomplishes the desired result is away ahead of any wedge. The (so-called) wedge, which I have seen in supers of your make, is no wedge at all, but a plain strip of wood of equal thickness at both ends. Mr. Wright's spring has the advantage over mine that it is simpler in construction, and easier to make. It can also be made to go into a narrower space than mine. If I did not already have a full supply of my own I would adopt Mr. Wright's pattern.

CLEANING PORTER BEE-ESCAPES.

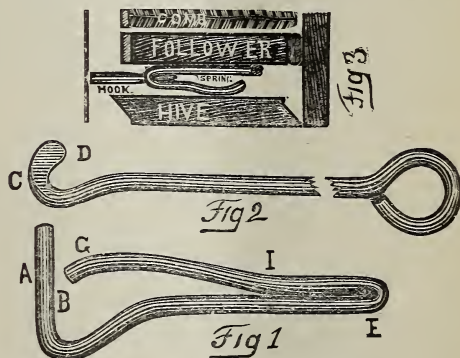
Some time ago I discovered that my Porter escapes had all clogged with propolis to such an extent that the two brass springs within could not move at all. I took the escapes (of

which I have 25 in use) out of the boards and boiled them in concentrated lye. Rinse in cold running water. They are now clean, and as good as new. I got the idea from reading Dr. Miller's way of cleaning T tins. This may be of assistance to some one.

WM. MUTH-RATHMUSSEN.

Independence, Cal., July 6.

[Turning back to our June issue for 1887 I find a description and illustration of round super-springs by Wm. Muth-Rasmussen. These springs are a little different in construction from any thing that has heretofore been shown; but they were made of round wire, and so constructed that the tension of the wire would cause a pressure on the sections in the



super; but Mr. Wright says he introduced his springs in the spring of 1883, so that he precedes Mr. R. by about four years. But I suspect we shall have to give the credit for the basic principle to Capt. J. E. Hetherington. He first conceived the idea of squeezing up sections in the super by means of a continuous and yielding pressure brought about by steel springs.

It is very seldom that so much propolis is gathered that the Porter bee-escape would be clogged in the manner described. Mr. R. must have left them on the hive for a considerable length of time; for usually they are not supposed to be over the bees for more than 24 hours; but in case they do become waxed or daubed with bee-glue, then Rasmussen's scheme of cleaning, or Dr. Miller's, rather, is the one to use.—ED.]

BELGIAN HARES AND BEES GOING WELL TOGETHER.

I wish to say in connection with your editorial note on page 446, that I have tried the combination of "bees and Belgian hares." They work together. Hares are more easily raised than chickens (I have all three), and are very healthy and hardy if kept in clean quarters, and fed sensibly and regularly, and healthy stock were gotten at the start. Your advice about a beginner going cautiously at first is very good. A trio (one buck and two does) is enough to get a good start, and they will increase about as fast as the beginner's knowledge of their care and needs does. Also there are now quite a number of books and

period calls devoted to their care and breeding, and, as in bee-keeping, a good text-book is one of the first essentials—in fact, *the* first.

ERNEST W. HALSTEAD.

Fort Stanton, N. M., July 12.

SMOKER FUEL, AND IGNITING THE SAME.

In your issue of July 1st you recommend planer chips as fuel for smokers, but seem to find them rather difficult to get well started. For over ten years I have used such fuel in preference to all others, and for much of that time used kerosene to start them with; but I find a small handful of charcoal to be better. I ignite the charcoal with a bit of burning paper or a few shavings, and, after a few puffs of the bellows, the smoker is filled with planer-chips, and ready for use. It is not necessary to have commercial charcoal for this purpose, as the siftings from the ashes of any wood fire will do nicely. A. C. MILLER.

Providence, R. I., July 13.

[When I was working actively in the apiary day after day it was my practice to have a spring-top oiler, such as is used for lubricating machinery, filled with kerosene. The smoker was partially filled, and then a few squirts of the fluid were thrown on. A lighted match was dropped on it, the smoker closed, and the bellows worked for about a minute. When live embers began to appear, more fuel was added until the fire-cup was full. This always worked very nicely, but somehow our people have not got into the fashion of using it of late. Live coals are the most convenient of any thing to light smokers, providing the kitchen stove is handy; otherwise I prefer the kerosene and the regulation match.—ED.]



J. H., Ga.—We are not able to tell you what was the cause or the source of the bitter honey without receiving a small sample, and might not even then. But there is a good deal of bitter honey that comes from different sources. As between the two locations, we would choose the one near the swampy ground rather than on the hill, because the fruit-trees would not have very much effect on the yield.

J. M. S., Maine.—In reference to your question in regard to the queen in the swarm, that does not lay, I would suggest that possibly she has been injured in some way. If so, it may be best to introduce another queen. But it is well to consider that, after a honey-flow, queens are apt to stop laying entirely. Before replacing the queen I would advise you to feed the colony about half a pint of sugar syrup daily for about a week. If she is good for any thing she will begin laying in short order.

W. P., Ill.—The probabilities are that the season has been so poor in your vicinity that the bees have had no incentive for swarming.

They are strong enough; and if honey had been coming in they would have swarmed. If other colonies are gathering honey, and this one is not, then possibly the bees are queenless, or perhaps the hive is in too hot a place, with too much sunshine. With regard to getting a colony out of a chimney, there is no way of doing it but to crawl up the chimney, if it is large enough, and take it out. The bees should be smoked first, of course, and the one who undertakes to get them out should be well protected with a veil, gloves, and have his trousers legs tucked well down in his stockings, and his sleeves tied also.

J. K., Miss.—When bees take a notion to swarm out every day as often as you put them back, there is no use in trying to make them stay in that hive or in that location. You can lead a horse to water, but you can not make him drink. When bees swarm out a second time from the place where they have been hived, I would by all means advise hiving them somewhere else. The more you hive the bees back, the more furious they are to get out the next day. I remember I hived one back one day four or five times, and actually nailed wire cloth over the entrance; but those rascals pushed and pushed, and tried to remove it. I kept them confined two days; then when I removed the cloth, out they poured. I finally hived them in an entirely new location, giving them unsealed brood, and they thereafter stayed at home.

R. L. H., Ind.—I am always pleased to answer questions for our patrons, and endeavor to give a private reply when requested; but sometimes, owing to the crowd of correspondence, letters with questions are occasionally overlooked, or delayed beyond the time when the answer would be of any value. Bee-paralysis in the North will usually disappear of itself; but sometimes it is severe, and in such cases colonies having it should be isolated in a location at least a mile and a half from the other bees. If other colonies have it, they should be placed along with it, and there establish a quarantine apiary. If your bees had spring dwindling, and recovered, of course there would be nothing to fear now. In a colony that has no eggs, there is probably a virgin queen that has not begun to lay yet; but to make sure that she has not been lost on her fertilization trip, I would suggest that you give it another frame of unsealed brood so that, if she is lost, the bees may start new queen-cells, when you may be sure that they are queenless. If you have any dead brood in your apiary, the matter of which ropes slightly, it may or may not be foul brood. But the various forms of the other diseased brood will rope very slightly—one-eighth of an inch, perhaps. When we have a clear case of foul brood, the dead matter should string out from a toothpick at least an inch. In all probability you had a case of pickled brood, which will rope very slightly, and in most localities this will disappear of itself; but if not, it should be treated by shaking the bees on to new frames of foundation, and the old frames should be destroyed—that is, burned or buried.



I AM just now engaged in the fun of making lantern-slides for stereopticon work that is to be given at the coming Chicago convention.

ELSEWHERE in this issue I give a program of the next National convention, to be held in Chicago on the 28th, 29th, and 30th of the present month. It will be noted that there will be fewer papers for each session than ordinarily given; but the intention is to give more time for the consideration of the Question-box. There will be a set of live practical questions prepared, and these questions will be handled by such men as Dr. C. C. Miller, E. T. Abbott, Hon. R. L. Taylor, Dr. A. B. Mason, O. O. Poppleton, and others.

THE frequent and copious rains that we have been having every few days, in our locality at least, have made a magnificent growth of sweet clover. This plant has now been in bloom for nearly a month, and gives promise of being in bloom for at least two weeks longer. The bees in our locality have been busy on it from 9 o'clock on; and at one of our out yards sweet clover (what else can it be?) has made quite a showing in the hives. If we can only be blest with a fall flow (and certainly all conditions seem to favor it) the season will not be so bad after all.

THE HONEY SEASON AGAIN FOR 1900.

OUR friends have been kind enough to continue sending in reports from all portions of the country. The revised outlook stands about as in our last issue. There is very little change to make. Taking it all in all, the season is no better than last year, which was considered poor, although there have been special favored localities where quite large crops of honey have been secured.

EXTRACTING; BRUSHING BEES OFF THE COMBS; UNCAPPING.

AS many leave their extracting until after the honey-flow when they will have more time, perhaps a few hints regarding the practices of the most extensive bee-keepers in the country will be of value just now. I have been present in a number of apiaries during extracting time, and I will endeavor to give a few of the methods that are used.

The extractor should be of course anchored down securely. As to whether it should be elevated on a box high enough so the honey can run into a barrel direct, seems to be somewhat of a question. It is urged that, when the extractor is so high, it is very inconvenient to put in and remove the combs; that the machine should be low down where it can be got at easily, even though it does necessitate emptying a pail or other shallow vessel every few minutes, that may be placed under the

honey-gate. So far as I can gather, the majority of honey-producers favor the lower elevation (see illustration on page 608). As the honey runs into the pail its quality, and whether or not it has dirt in it, dead bees, or particles of wax, can be easily seen at a glance. True it is that a strainer can be placed over the gate to catch every thing in the form of loose particles of foreign matter. But if the honey runs into a pail, its specific gravity can be told by the way it runs out of the gate.

Where square cans and kegs are used, large funnels are placed in the tops, or bungholes; and the honey, as fast as it is extracted, is poured directly into the marketing-packages.

In California and in the West, where the liquid article is produced by the carload, it is the practice, wherever possible, to have the extractor-building on the edge of a side hill—the building to consist of a basement, or lower story, on a level with the bottom of the hill, and a second story on a level with the top of the hill. In this case the combs are run into the building into the second story, or what might be called the first floor. The extractor is mounted on the floor, being securely anchored. A pipe leading from the honey-gate connects with a large receiving-tank of 5000 or 10,000 lbs. capacity below, said tank being raised up just high enough to allow the honey to flow into cans of 60 lbs. capacity. Where the conditions in the lay of the land favor such a structure, it is by all odds the most convenient.

I have in mind one apiary where the combs are run down a slight grade from the apiary into the first floor of the extracting-house. The honey is extracted, and run directly from the extractor into a receiving-vat just below. Here it is drawn off into square cans, and the latter are loaded on to the wagon, ready for the market.

A great deal will depend upon how extensively one is engaged in the business, as to which method he will adopt. It was our practice, years ago, to elevate the extractor enough to run the honey directly into the barrel; but I now know that the bungs had a fashion in some cases of pushing out because of a little thin honey mixed with the other. This thinner honey would rise to the top and cause a ferment. I believe it is becoming less and less the practice to barrel honey, and more and more to put it in square cans.

ABOUT GETTING BEES OFF THE COMBS.

In these days of perfected bee escapes, it seems like folly to think of brushing and shaking; but where out-yards are located miles from home it is very often inconvenient to make two trips—one to put on the escape-boards and the other to take off the honey a day or two afterward. As I have already stated, Mr. Cogshall's practice is to smoke the bees down in the super or top story by flapping the quilt on top of the extracting-frames while the smoker is being worked. This causes the smoke to drive the bees, at least half of them, down into the brood-nest. The frames are next shaken when half drawn from the super, and last of all brushed with a long whisk-broom having the strands thinned out.

And right here it might be well to state that a good many have a very wrong idea as to how this Coggsall brush is to be used. The combs should not be swept in the same way one would sweep a floor; but the broom should make a *side* sweep, so that the *edges* of the strands may strike the bees, and not the *ends*, something as shown in the illustration on page 605. Mr. Coggsall has his broom tied to his waist; and the moment he is through using it he simply lets it drop; and when he is ready for it again, it is in his hand in an instant.

UNCAPPING.

Of all the different uncapping-devices, I do not know of any that is quite so handy and so convenient as the Dadant uncapping-can, see page 610. It has a large capacity for the cappings, and also a large capacity for the drainings. It is convenient in height, light in weight, and when the uncapping is completed it can be covered, and the cappings allowed to drain for several days if need be.

THE NATIONAL CONVENTION AT CHICAGO; SOME OF ITS ATTRACTIONS.

If there is any one feature that our bee conventions have lacked in the last few years, it has been stereopticon work. It was introduced for the first time, if I am correct, in the history of the National, at Philadelphia, by W. E. Flower, and was a marked success. It was also a distinct and prominent feature at the New York State convention, held at Geneva last winter.

For a long time I have been wishing for a first-class stereopticon, and have now finally purchased one using a powerful electric light of 3000 candle power—one that the manufacturers tell me will give the very finest and best results. This will be in evidence at the Chicago convention on Wednesday and Thursday evenings. On the first evening there will be thrown on the screen some pictures of some of the prominent bee-keepers of the day; Dr. Miller will pay tribute to Langstroth, and Dr. Mason will come in for the jokes. The views will also embrace snap-shots from many apiaries of the United States, and even from old mother England. In connection there will be shown briefly the anatomy of the bee, special reference being given to the tongue, about which so much interest is now being manifested. The methods of measuring tongues will be illustrated, together with a view of the variations already discovered. Thursday evening, the last session, some of the beautiful photos secured by Mr. Hutchinson on his recent trip through Minnesota and Wisconsin will be thrown on the screen. These will be some of the finest pictures that were ever projected, and no one who can come should miss this treat. Of course, Mr. Hutchinson will tell us about them.

On both evenings will be shown views of the various hive-manufacturing plants of the United States. Every establishment, so far as I know, will be represented, or at least an effort will be made to secure photos of each. A glance at the program, p. 630, will show that

such men as Thomas Wm. Cowan, editor of the *British Bee Journal*, and perhaps the most distinguished bee-keeper in all Europe, will have a paper. There will be another paper from Dr. W. R. Howard, the scientist who has done more in the study of the diseases of bees than, perhaps, any other man in this country. R. C. Aikin, President of the Colorado State Bee-keepers' Association, and one of the most practical bee-keepers of the world, will be present and discuss a live issue.

There are other equally good papers, but these are only samples of the good things that will be spread before the bee-keepers who will be fortunate enough to attend that convention in Chicago. The railroad rates will undoubtedly be very low, so it will be possible for many to make a very pleasant and enjoyable trip. After the convention there will be ample opportunity for any who may desire to take in Lincoln Park, the old World's Fair grounds, and a hundred and one interesting things in the most hustling city of the United States—Chicago. Lincoln Park alone is worth the trip.

I nearly forgot to say that we will endeavor to have pictures taken of the members of the convention, probably during the first session. If our plans work well, this picture will be thrown on the screen Wednesday or Thursday evening; so if you wish to see "yर्सilf" as itthers see you, come and see "yर्सilf" projected on the screen.

EXPERIMENTS WITH FOUNDATION BY PROF.

C. P. GILLETTE.

THERE has recently been issued from the Agricultural experiment Station, Fort Collins, Col., Bulletin No. 54, detailing a very interesting series of experiments and observations on foundation, by Prof. Clarence P. Gillette, a gentleman whom we have already introduced to our readers, and who seems to be especially interested in bees.

The object of Prof. Gillett's experiments was to show the economic values of the different weights and grades of foundation; how much of the wax is actually utilized by the bees; whether the base, or septum, is or is not reduced in thickness, and whether or not the cell-walls built from ordinary foundation are as light and delicate as those of the natural article itself. His own conclusions are thus summarized at the close of the pamphlet:

1. Bees use freely the wax in foundation to extend both the midrib and the cell walls of honey-comb.
2. The heavier the foundation used, the heavier, as a rule, will be the comb built upon it.
3. If the midrib of a foundation is much lighter than that of natural comb, the bees are likely to strengthen it by adding wax to the bottom of the cells. Possibly this is done only where there are actual perforations of the comb.
4. If the midrib of the foundation is thicker than the midrib of natural comb, it will result in a comb with a midrib thicker than the natural. Or, to state it differently, the bees will not thin the midrib of a foundation down to the thickness of worker comb built in the natural way.
5. Midribs of foundation that are not more than .17 of a millimeter (.007 inch) in thickness, are thinned little or none by the bees.
6. Drone comb has a thicker midrib and heavier cell-walls than worker comb.
7. A foundation with a heavy midrib and very slight

cell-walls will still produce a comb with heavy cell-walls.

8. Very high cell-walls in foundation are not cut down to the thinness of cell-walls in natural comb.

9. The thin and extra thin and the "1899" deep cell foundations produce a comb that approximates very closely the lightness of that which is naturally made by the bees.

10. When heavy foundations are used, the extra weight of the comb built upon them is due more to the extra weight of the cell-walls than to the heavier midrib.

11. When very light foundations are used, the somewhat heavier comb is due almost entirely to the midrib being heavier than that of natural comb.

12. When foundations containing an abundance of wax to build the entire comb are used, the bees still add much more wax, sometimes nearly enough to build the comb without the help of the wax in the foundation.

13. Wax seems to be given with the best economy when the midrib of the foundation is of the thickness of the midrib of natural comb, and when there is a small, or at most a moderate, amount of wax in the cell-walls.

14. Poorly attached combs in sections seem to be more the result of weak colonies and poor honey-flow than to the kind of starter that is used; though large starters and strips of foundation in the bottom of the sections do help to strengthen the union of comb to the section.

15. Separators between the sections are essential to the best results in producing comb honey.

16. The thicker the comb, whether natural or artificial, the greater the proportion of honey to wax in it.

17. In natural worker comb, one inch thick, the proportion of wax to honey is between 1 to 20 and 1 to 25 by weight.

In the main, the results of his experiments seem to agree very well with those made by Mr. Weed, with one or two exceptions; and that is, on the point as to whether the bees reduce or thin down the thick midrib of ordinary medium brood foundation, and whether the cell-walls of foundation are thicker than those of ordinary comb. In referring to the table on page 11 of the bulletin, which, by the way, is a very interesting one to study, Prof. Gillette says:

If we examine columns four and five we shall see that the increased weights of the examples of comb on artificial foundation were due more to the extra wax in the cell-walls than to the increased amount of wax in the midribs in cases of the heavy foundations, but not in cases of the thin and extra thin super, or "1899" deep-cell foundations.

Elsewhere, in referring to the same matter, he says:

With this additional evidence, it seems impossible to avoid the conclusion that heavy foundations result in combs heavier than the natural, and that the increased weight is due both to thicker midribs and heavier cell-walls, but much more to the latter than to the former in cases where heavy foundations are employed, even though much wax is left unused in the midrib.

Strangely enough, I get almost the opposite conclusion after a careful study of the table. The experiments that Mr. Weed conducted in my presence also seem to support my interpretation; namely, that the increase in the weight of comb made from heavy foundations is generally due more to extra wax in the midribs than to the extra wax in the walls. In the table on page 11 of the bulletin, for example, we find that a comb of medium brood 1.30 inches thick and one inch square had a midrib that weighed 6.87 grains, while the cell-walls weighed only 12.63 grains. Comb of the same size, built entirely by the bees, without foundation, 1.33 inches thick, had a base weighing 2.20 grains, while the walls weighed exactly 10. Now, if we subtract the

2.20, the weight of the midrib of the natural comb one inch square, from 6.87, the weight of the midrib of a one-inch-square comb from medium brood foundation, we have as a difference 4.67 grains, while the difference in the weight of the walls between the two is only 2.63 grains. The difference in midribs in this case is nearly twice as much as the difference in the walls. Take another example: Another medium brood comb $\frac{3}{4}$ inch thick, compared with the same thickness of natural comb, shows a difference in midribs of 3.45 grains, while the difference in the walls is only 1.95 grains. I find just two other sets of figures that show a slight increase by half a grain for the wall over the midrib; but all the rest support my understanding of the table.

A careful study of the photographic reproductions given in this bulletin seems to bear out also the assumption that the increase in weight is due rather to the septum than to the increase in the wall.

But Prof. Gillette's tables do show that the bees reduce the bases of heavy and medium brood foundations slightly more than I have been led to believe from Mr. Weed's experiments, and that the bees also make a slight increase in the weight of the walls when the comb is built from heavy and medium brood over those walls built in natural comb.

The knowledge gained from this bulletin is important and very valuable; and while to me, at least, it does not change materially the conclusions arrived at by Mr. Weed, it goes to show the great importance of making all the foundations with bases practically as thin as the bees make them, whether for brood purposes or for sections. While it has not been possible, from a mechanical point of view, to make all foundations with such bases, the Root Co. has been working toward that end, and its foundations of 1900 have much thinner bases than the foundations of 1898 and the fore part of 1899.

Prof. Gillette's tables also show considerable variation in building of cell-walls; and a careful study of the figures shows to me that the surplus of wax in foundation (and we must have a surplus to keep the sheets from sagging) should be put in the walls of the foundation itself. But the Root Co. is striving to reduce the wax, both in the walls and in the bases, and hopes to have, before two or three years roll by, a brood foundation as thin as that now made for super, but which shall have incorporated in the wax itself very fine slender wires, about No. 40 size. Such foundation would be a great saving in first cost to the bee-keeper, because now he is obliged to buy a foundation for brood-frames that has a surplus of wax, not because the bees need it in drawing out the combs so much as because it is required to keep the sheets from sagging while being drawn out.

While these experiments seem to modify in part some of the conclusions made by Mr. Weed from his experiments, yet in the main they corroborate his principal propositions. There are some other points that I wish to speak of, but I shall have to defer their mention until our next issue.



Be ye wise as serpents, and harmless as doves.—
MATT. 10:34.

Friend Root :—If I may presume to call you so. It is supposed to be helpful to a man to be given an opportunity to see himself as others see him. "As others see him," I take it, refers to the view or estimate of the man by those of a different way of thinking, rather than of those of his own especial class. I have just now been reading GLEANINGS, July 1, page 540, written professedly in the interests of Christianity. The honesty of the profession I do not question. I do, however, think the move a mistaken one. Christ never worked on that line. The spirit that pervades the writing is not his—quite a different one indeed. Can you quote a single instance in which Christ manifested any such show of hostility toward a sinner, no matter how vile? The one thing that excited his righteous indignation and prompted him to make use of severe language was the spiritual pride and intolerance of the Pharisees. Love, and not legal restraints and penalties, was the force that he employed and advised others to employ. He brought his influence to bear, not against the acts of men, but upon their hearts. You, and those with you, write and talk and act as if liquor-drinkers and liquor-dealers were wholly beyond the pale of Christianity. Drunkenness was not unknown in his day, and yet he had less to say about it than some other sins that are not, as times go, in such bad repute. Consider, for example, the answer that he gave to the young man who went to him and asked him, after having rehearsed all his good points, what further might be required of him. It never seems to occur to the so-called temperance people to reflect upon what may be the effect of their attitude toward the intemperate class in advancing or retarding the cause they profess to have so much at heart. Why assume that liquor-dealers are not to be regarded as amenable to Christ-like influences, but only to be kept in order by fear of the law? From no one thing has the cause of Christianity so suffered as from the intemperate zeal of its followers. What else but that ought we to blame for the atrocities committed by the Spanish Inquisition and other like infernalities perpetrated by the stronger sects of professed Christians upon the weaker, with the honest though awfully mistaken object of putting down error and aiding in the spread of the religion of Christ? Is it not a dangerous spirit to arouse? Under its influence a sort of insanity possesses the men who foster it—a variety of the disease that attacks men in the mass as distinguished from the more common sort that affects individuals, and which latter is by much the less dangerous of the two. After making due allowance for the exaggerations of temperance orators it must be confessed that the evils arising from the excessive use of alcoholic liquors are very great; but do you think it is a less evil to set two large classes of the community, the one again the other in bitter hostility? Christianity, or the name of it, more correctly speaking, has been many times too often used as a cloak in the furtherance of designs neither Christian in their essence or methods, and it has suffered accordingly, at least in reputation. This is so unfair to Christianity that one ought to be very sure, after having subjected himself to a severely critical examination, that he is so perfectly clean inside that he will not soil the cloak by putting it on before he ventures to do so. You, I fancy, friend Root, are an impressive man—one who is apt to be led away by his feelings before his naturally sound judgment has been allowed a fair show in the premises.

What I have written may serve as a hint sufficient to induce you to go back and examine the course you have taken, to determine whether it has been quite straight, and on solid ground, as your utterances have been public.

You will not, I hope, think I have taken any undue liberty with you. You are, like myself, not a young man, and so are able to take things coolly. This is not, of course, intended to be used for publication, neither is it designed to draw you into a discussion. Discussions, as a rule, seem to result in making both parties more set in their original positions. It is just a suggestion for your own private consideration, and nothing more.

W. O. EASTWOOD.
Whitby, Ont., Can., July 8.

Our readers will note that the above letter was not intended for publication; yet I take it, nevertheless, that our good friend E. will not object to having it appear in print providing I desire to use it so; and I would thank the writer for having called attention in his very kind yet forcible way of presenting one side of this matter, and a side that we all need to ponder and consider *again and again*. Jesus did, it is true, come from heaven to earth to bring *peace and good will to mankind*. His mission to earth, as I take it, was as a mediator between God and man; and I have sometimes thought the great Father especially desired that his work should be accomplished particularly along the line of non-resistance. You will notice it shines forth in all his talk and teachings; and we can not wonder greatly that a large religious body has made it a special feature of their creed—non-resistance to evil. They do not even go to law, and they have accomplished wonders along that very line. I confess that at one time in my life I had great faith that righteousness might entirely triumph over iniquity through love and peace and good will.

Some years ago I became pretty well acquainted with an old gentleman, a bee-keeper, who belonged to the sect that believes in non-resistance. I asked him a great many questions. He said they never went to law, but he believed that at times they got some friend to transact such business for them. Not very long after this talk an unprincipled young chap from a neighboring city began to pay "attention" to a lovely sixteen-year-old girl, the daughter of my friend. The father objected, and ought to have ordered the young man from his premises. But his religion prevented him from getting into a quarrel. The young scapegrace evidently *presumed* on the parent's non-resistance. He ruined the girl, and then added another crime that sent her to a premature grave. Had the young fellow been told he would have to marry the girl or take the penalty of the law, the two young people might have been living honest and consistent lives at the present time. The father would not resort to law or anything else, so the young man had free swing, and got away scot free. The event brought the gray-haired father down to his grave. Of course, there are times when it is right and proper for one to die the death of a martyr—to die that the world might be made *better*. But this old friend of mine and his simple, honest, innocent, childlike girl, died that this vile chap might be made *worse*, and go right on, hunting up another victim as soon as he could find one. Will any father undertake to say this is doing as Jesus would do? Does not such an event make us feel glad that Jesus once said, "Think not that I came to send peace on earth: I came not to send peace but a sword"?

Our good friend calls attention to page 540, July 1. I presume he alludes to what I said about wresting the reins of government from the hands of wicked men; and then he adds, "Christ never worked on that line." He says further, "Can you show a single instance in

which Christ manifested any such show of hostility toward the sinner, no matter how vile?" I honestly admit it is pretty hard to find anywhere in our records of the life of Jesus that he ever seemed very hostile or severe to any *penitent* sinner. One might almost imagine they did not have any such wholesale wickedness in his time as is to be found just now. And it is also very likely true that he was more severe on the hypocritical Pharisees than on any man who fairly and squarely, by actions, if not in words, *acknowledged* himself to be a sinner.

I have talked a great deal about that new phrase that has come to us—"What would Jesus do?" and our good friend E. seems to think I have a wrong conception of what Jesus did do or would do; and if I have, I am glad to be set right. Je-*su* never performed any miracle to damage or injure anybody. It is true he caused the death of the swine, when his casting out the devils as he did caused them to plunge down into the sea. But no human being ever suffered, so far as I know, from any direct exhibition of his divine power. People were healed, and relieved of pain right and left, and that seems to have been especially the dear Savior's mission. But, friend E., have you considered that, after he left this earth, Peter invoked that same divine power, and struck with instant death both Ananias and Sapphira? Did Peter make a mistake or lack in judgment? If so, how can it be that God honored his prayer, or his command, if you choose? Again, Paul struck a man with blindness by his command, and the Holy Spirit honored him too. There are, perhaps, other instances of like nature that took place after Jesus left this world.

You say, "Love and not legal restraints and penalties was the force that Jesus employed and told others to employ." Now, please bear in mind, dear friend, we are not arguing—we are certainly striving for the truth; for you truly say in your closing words, "Discussions, as a rule, seem to result in making both parties more set." May the Holy Spirit guide me and help me to avoid any thing that would have the effect of making either yourself or myself the least bit contrary. Now to go back.

When Jesus drove the money-changers out of the temple he used force, even though it was a gentle force. They gave way, and obeyed; but I have sometimes conjectured that they did not even know themselves just why they obeyed him so quickly. Dear friend, I can not think you have read my writings very long, or you would hardly suggest that I talk and act as if those in the liquor-trade were beyond the pale of Christianity. May God be praised that we have hundreds if not thousands of bright and shining lights in the Christian church who were at one time in the liquor-traffic or in the chains of the liquor habit. John G. Woolley, the nominee of the Prohibition party, is one of the brightest examples; in fact, his history often makes me think of Paul himself, especially when I hear him speak, or read his stirring addresses. I personally know that the members of the An-

ti-saloon League, at least a great part of them, are always ready to lend a helping hand to any poor soul where it seems possible to get him to make even a start from darkness toward the light. I myself am largely responsible for advising the League to pay greater attention to *legislation* than it did at one time. It has certainly occurred to you that the great Master himself said, "I came not to bring peace on earth, but a sword;" and then if you read a little further in that tenth chapter of Matthew you will notice he says, "I am come to set a man at variance against his father, and the daughter against the mother," etc. Mrs. Root asked me not very long ago if I did not believe the fights we have had here in Medina in endeavoring to enforce the law against liquor-selling were doing almost as much harm as good. She suggested that it was stirring up hard bitter feelings, arraying one side of the town against the other, making divisions in families, and making the patrons and vendors of the stuff *uglier* and more *vindictive* than they had ever been before. While I was forced to admit the truth of what she said, I told her I could not see any other possible way. We have tried again and again letting things drift along in order to have peace and good will. Yes, we have all tried it, not only in our little towns but in our great cities. Shall we permit law-breaking to go on unrebuked just because it stirs up angry men and provokes strife? God forbid. Why, dear friend E., the Master himself provoked hatred and bitterness, even to calling up murderous thoughts *wherever* he went. Even with that wonderful life of his, so pure and innocent, and free from offense toward everybody, the Jews sought to kill him at almost every turn. Let me give you just one illustration. When he brought Lazarus back to life, and restored him to his friends, one day had scarcely gone by before his enemies were planning to put him to death. One of them, the high-priest, Caiaphas, even went so far as to say, "It is expedient for us that one man should die for the people, and that the whole nation perish not." Jesus' only *crime* was in giving back to that beloved household the brother who had passed the gates of death. Finally the bitterness of his enemies was so great they *did* put him to death on the cross. Yet he tried as never man tried before to avoid offense and to soften the hard hearts of his persecutors by his lamblike meekness and humility. Are we called on to do as he did in this matter? Does God desire or did Jesus himself expect his followers to submit meekly to *every* indignity and atrocity? Dear friend E., somehow I have a hope that you are honest enough and kind enough to *admit* that you are not able to decide *just* what Jesus would have us do in all matters of human life. Let me digress a little.

Some years ago a neighbor of mine was in the city of Columbus. He was near the great depot, on the platform, a little way from other people, when some ruffians proceeded to rob him. They first knocked him down, but he was still able to call for help. Now, this man had done nothing to call forth bitterness and

hatred. He was attending to his own business, and was not, if I am correct, even imprudent. No one would think of his being attacked in such a public place. Well, these fellows who were robbing him, or trying to, grabbed him by the throat, and commanded him with horrible oaths and curses to shut up or they would kill him. Why, if I were to tell you the language they used, and of the names they called him because he kept calling for help, it would almost make your blood run cold. What called forth or stirred up this fierce passion and hatred they exhibited? They hated him, and threatened with foul oaths and curses to *kill* him, just because he didn't hand out the money that was honestly his own. Shall we as followers of Christ Jesus submit meekly to such treatment as that? Could any *good* come from permitting oneself to be murdered and robbed? Would he not, on the contrary, be guilty of a crime against *humanity* if he bore it all and made no protest? Does not the obligation we each and all of us owe to society *demand* we should do all in our power to uphold and have our laws *enforced*? What ought my friend and neighbor to have done under the circumstances? You see it is not exactly a question as to *what* Jesus would do, but what would he *have* us do? Perhaps some of the friends will suggest there are places in the life of the dear Savior where he declared he did *not* come into the world to do away with the enforcement of law. He once said to the Jews who tempted him, "Render unto Cæsar the things that are Cæsar's, and unto God the things that are God's."

The incident I have given was a small private matter—I mean the one in regard to the burglars. While I write, the government of this country is guilty, at least indirectly, of carrying intoxicants to the inhabitants of the Philippine Islands—the ignorant heathen whom we are undertaking to civilize. I do not think they are doing it according to law. The Presbyterian, Methodist, and other churches have collectively uttered vehement protests. The harm they are doing is a thousand fold greater—in fact, it is not to be compared to the indignity my neighbor suffered at the hands of *two* outlaws; because it is going to stir up ill feeling, and possibly *war*, shall we, as followers of Christ Jesus, let the thing go on?

Yes, I do know "a sort of insanity possesses" even temperance people when they get really engulfed in a bitter fight; that is, it does unless we pray constantly for grace from on high, and for the influences of the Holy Spirit. I myself am *afraid* of getting into a quarrel; and if there is any time in this world when I constantly repeat my little prayer, "Lord, help," it is when I am called on to push forth into a hand-to-hand conflict with the powers of darkness. I am glad to see you admit "the evils arising from the excessive use of alcoholic liquors are very great." Yes, I do think it is a *less* evil to provoke bitter hostility between large classes of community, providing always that at least one of the classes is striving to be guided by Christ Jesus. Sure-

ly you would not undertake to say war is *never* right and proper. If the police had succeeded in getting hold of the miscreants who robbed my neighbor, there would doubtless have been "bitter hostility." The outlaws would, perhaps, have killed people right and left before submitting; but surely you would not recommend letting them go *because* of this. We have recently had examples in our great cities of permitting law-breakers to go "scot free;" and, while I think of it, I do believe there *is* a growing evil just now more to be feared than even intemperance; and that is, this disposition to ignore law, or perhaps, rather, to *defy* law. The horrible massacre in China that is startling the world at the present time, it seems to me is only the result of letting law-breakers go unpunished, and may be this country is indirectly responsible as well as the rest of the world. Dear brethren, I do think it behooves every one of us, whether professing Christians or not, to be *very careful*—yes, *exceedingly* careful—about *unnecessarily* provoking strife and bitterness. I am so firmly convinced of this that I feel sorry to see our different political parties having their parades. I feel sorry to see our boys wearing badges. If each parade carried the *American flag*, then I could say most heartily, "God speed the procession;" and if the badges showed forth the American flag, and nothing more, then I would say, "Let us have them. The more the better." No one should ever be *ashamed* to show his colors, no matter where he is, or under what circumstances. Let him boldly show forth the red, white, and blue. Let him proclaim, "I belong to the United States of America;" and let every Christian in like manner be not only willing but ready to let all men know, no matter what crowd he is in, "I belong to Christ Jesus." And, dear brother, let us all remember the words of the Master when he said, "Be ye wise as serpents and harmless as doves." Even when we are in the thickest of whatever fight the defense of our country or the defense of the dear Redeemer's name shall call us, let us always have in our hearts the spirit of that good old hymn I used to hear away back in my childhood days:

Come, Holy Spirit, heavenly Dove,
With all thy quick'ning powers;
Kindle a flame of sacred love
In these cold hearts of ours.



TRAVELS IN THE WEST, CONTINUED FROM
LAST ISSUE.

I found Western Springs, Ill., a very pretty little town, after I got to it. Vaughan's group of greenhouses occupies a side hill fronting the south and also fronting the railway, so one has a very pretty view of the whole plant from the cars. There are about two dozen greenhouses all together, all running east and west. In the center is a packing-shed or potting-

house running north and south; and on either side are doors opening into their respective greenhouses. Each house is something like 200 feet long, and perhaps 20 feet wide. All have the long slope on the south except one house. They built one house for a trial on friend Slack's plan, with the short slope to the south. My guide, Mr. Erickson, said they were not yet satisfied that this new plan was, all things considered, an advantage. He admitted the points mentioned by friend Slack, but said for their work there are several things about the idea that are objectionable. Even during July I found all their houses filled with plants, and all thrifty. They get rid of the severe heat by whitewashing the glass; but they do *not* give so much ventilation during a hot day as to let the hot dry air in the middle of the day evaporate the moisture from every thing in the greenhouse. That was an important lesson for me. Our greenhouse has too much ventilation, and not enough shading by the glass. Our curtains for shading the glass are on the inside. Friend Pike told me they should be on the outside by all means; but in that case they would get wet from rain, and, unless very securely fastened, blown off by high winds. I think I shall have to abandon my curtains, and whitewash my glass as other people do, another season. Another thing, the long side sloping to the south is altogether too flat (in our house) for very hot weather. I begin to be impressed by the fact that it is a pretty safe thing to follow the fashion of those who build greenhouses or any thing else on a large scale. Vaughan has also a lot of hot-beds and cold-frames outside. He protects valuable plants in these beds with a covering of burlap. The burlap is placed high enough so as to give the plants plenty of room to grow, and it is secured from being torn off by high winds by having strips of long lath tacked on outside of the burlap. Then he has some very pretty grounds surrounding the greenhouses, where there are plants that bear the hot sun without protection.

I can not tell you of all the beautiful things I saw in that greenhouse; but I must mention a pretty dooryard belonging to one of his men—Mr. Cropp. At one side of the pretty residence is perhaps an eighth of an acre. It is mostly lawn. But around the outside of the enclosure are groups of shrubbery, the tallest plants being next to the fence (or where I supposed there was a fence, for really no fence was visible), then the smaller things make this living wall slope down gradually. A rose-bush that captivated me entirely, or, rather, a group of bushes, Mrs. Cropp told me was the Crimson Rambler. It is a little bit of rose; but when at its best it is one of the handsomest things in existence. When I got my first glimpse of Dr. Miller's rose-garden I found as a center-piece one of these same Crimson Ramblers. When the buds first open they are of a very deep crimson. As they grow older they become lighter in color, so you have on the same bush a beautiful shading from the deepest crimson down to a light pink, and the bushes just bear *bushels* of roses.

At just about dusk I was on the train again

for Chicago; and almost as soon as it was daylight I was out with my wheel inquiring for South Park. This is unlike Lincoln Park, but is, perhaps, just as handsome after another fashion. The thing that captured me entirely was the Grand Boulevard. In my simplicity I did not know there was such a thing in Chicago or anywhere else. I found South Park by wheeling down Michigan Avenue for eight or ten miles, and I pronounced that avenue very fine; but on my way back I stumbled into the Grand Boulevard. I struck it just as the boys and girls (of all ages) were going to the city to work. This boulevard has a beautiful wide street in the middle, for all sorts of vehicles; and on either side of this is one of the finest wheel-paths, if not *the* finest, in the world. No horses or vehicles of any sort are allowed in the wheel-paths. The wheelers go up on one side and down the other, so there is nothing at all in the way. Grand Boulevard may be five miles long, and at the time I struck it there was a perfect stream of wheels all going in one direction, and pretty much all riding at as high a rate of speed as I cared to ride. There were not only hundreds but thousands; and as far as I could see, before and behind, this wheel-path, perhaps 25 feet wide, was occupied by the wheelers. Some years ago an irate person in our town complained to the council because there were so many boys and girls riding wheels everywhere and in everybody's way. He said there were not only strings of them, but regular platoons. Well, the great city of Chicago seems to have recognized that these "platoons" of wheelers of both sexes *need* a good nice place to go and come on, and therefore they have provided it. I wonder if the time is not coming when Uncle Samuel will make similar highways and thoroughfares for those who prefer to travel by the aid of their own muscles rather than by the help of steam, electricity, horse power, or any thing else.

"Oh! I am so glad," I said to myself, while in that throng, "that God has permitted me to live during the age of wheels, and that he has permitted me, during this bright beautiful morning, to be *one* of the flying throng on this boulevard, furnished by the great city of Chicago for its boys and girls." I always like to see a boy and girl just emerging from childhood to boyhood or girlhood, and to manhood and womanhood; I like to notice the poise of the boy as he takes up a man's duties; and (come to think of it) I enjoy *just as well* noticing the poise of the young woman as she begins to recognize she is a woman instead of the child she has been. Well, in the same way I have always enjoyed witnessing the *graceful* poise, let us say, of a young miss who is getting to be skillful in riding her wheel. Such a young miss, with her braided hair floating in the breeze, happened to be riding just in front of me that morning; and somehow or other she *kept* just in front of me for three or four miles. Come to think of it, may be I kept just in the rear of her and her wheel. I wish to be truthful, you know, even in small matters. Well, she was an expert in riding the wheel. She could remove one hand

or both from the handle-bars to adjust her dainty cap, and the wheel seemed to be really a part of herself as it made graceful curves in order to go a little faster than some of her fellow-travelers. I love the boys and girls of this country, and I am proud of them; and when I get among them, and feel myself almost one of them, I can hardly tell you how I "hunger and thirst" to see them grow up to be good and pure—not selfish, but doing their part to help this great teeming world along—to help provide not only the wheels and the wheel-paths, but all sorts of comforts—that is, honest, innocent comforts and helps, for all humanity.

I do not like to travel on Sunday; but if traveling *must* be done I very much prefer to do it on my wheel, because in that case I do not ask anybody else to labor for me—no, not even the horses that generally have to work enough week days. The man at the ticket-office said I would have to take the 10-o'clock train, and it would land me at Elyria, 25 miles from home, between 9 and 10 at night. There was an 8:30 train, but to take it I would have to be at the armory, to have my ticket stamped, at 8 o'clock; then I would have to get from there to the Lakeshore Depot (two miles distant) in 30 minutes. This was an easy matter; but my wheel would have to be taken apart and packed in its case, and checked to Medina; and you may know by experience that you can not always get baggage checked when time is limited. But I decided to try hard to make the 8:30 train. Now, when I have something difficult on hand to be done at a certain appointed time, I have prided myself on looking forward and anticipating every thing that might make a hitch in the proceedings. Sometimes here at home we have to shut off our waterworks in order to make repairs, as we do not like to be a minute longer than necessary without protection in case of fire, so we plan to have every thing ready that may possibly be needed, so there will be no stopping at a critical time to hunt for this, that, and the other.

I was at the armory before 8 o'clock, had my ticket in my fingers, and every thing ready to be the first one to get a ticket stamped. The agent was late, and I told him the circumstances. He said, "All right; give us your ticket, and get your twenty-five cents ready, and you can be off in a minute." When I extended to him a dollar, however, he said I would have to make my own change. He said if I did not have the 25 cents he would have to take the next man. Not one in the crowd could change a silver dollar. I ran across the street to a drugstore. They were out of change, but said I could get it at the saloon next door; and here was A. I. Root *again*, rushing from one saloon to another to get a dollar changed. Had I wanted a drink they could have found the change. I kept going on further and further, and then remembered I had left my wheel in that crowd while I was two or three blocks away. Finally I came to a grocery, and got my change. By the time I was back, a great crowd was ahead of me. The agent had my ticket, and I tried to ex-

plain that I came in ahead; but I should not have got off had not a good friend given me his place. A good many minutes had gone by, but I jumped on my wheel, and explained to a policeman that I wanted to catch a train. You have all read in novels how the horse seemed to catch the spirit of the rider in some great crisis. Well, can't I believe that that wheel of mine caught the spirit of the rider as much as any horse ever did? The policeman seemed to catch the spirit as well as the wheel. They were very kind, pointed out the way, and said it was all right when I told them I wanted to catch the 8:30 train. My worst trouble was from vehicles coming down side streets. But I soon learned the trick. Sometimes I could follow in the wake of a fast rider. It took me 7 minutes to get from the armory to the Lakeshore Depot, and a policeman said it was two miles. The baggageman happened to be a good-natured fellow, and he helped me all he could. My wheel was pulled apart, packed in the case, the fastenings snapped together, and then, although I showed my ticket, there seemed to be difficulty about deciding what train I belonged on. I went to the right place, but the porter said that was not it—that I would have to go to the gate and inquire. But the gateman said it *was* "it," and I had about one minute to rest before the train started.

I reached Elyria between 5 and 6 o'clock, but had to stop briefly for lunch, as I had had no supper. My wheel, after it was out of the case, seemed to be just as ready for a run as it had been in the morning. I was doing nicely, and should have reached Medina before dark, but I came to a spot where there had been heavy rains, and it was getting too dark to see. Just then somebody came up behind me on a wheel, with an acetylene light. It proved to be a boy who had been in my employ, and he was on his way to Medina; but he wanted to stop at a little town to attend a farmers' institute. He offered to lend me his lamp, but then *he* would have to get through in the dark. If it had not been muddy I should have been all right; but I had to avoid mud-holes, and hunt up dry streaks, without any light. At one point I thought I saw a very nice smooth piece of road. Of late I seldom get thrown from my wheel; in fact, I sometimes boast that I have not fallen for a year; but when I struck that light, smooth-looking strip, there were some circus performances you may be sure. I could not think what had got into that road; and finally, in spite of all I could do, off I went on my head, into the ditch. When I crawled out I proceeded to investigate, and I found that the farmers had just plowed three or four furrows on each side of the road, and then the rain had stopped them. I had been trying to keep my seat while riding over those furrows in the dark. A little after 9 o'clock, however, struck the new stone road I have told you about, that leads right up to our door; and didn't I appreciate just *then* (*Saturday night*) and *there* a sort of road that does not have mud-holes and slippery spots, even if it *has* been raining hard!



DWARF PROLIFIC GERMAN BLACK SEEDED WAX BEANS.

Some time in the spring D. M. Ferry & Co., of Detroit, sent us a packet of the above sort of wax beans. I do not know why they sent them, for if I am not mistaken this is an old and comparatively well-known variety, although I do not remember that we have ever tested them on our grounds. But it was a surprise to me to find them earlier than the Davis wax beans, more prolific, and very much more crisp and tender. In fact, when we found they were so superior to any other wax beans we had ever got hold of before, I purposely let some of them mature to see how long they would be good without getting tough or stringy. Well, we have been picking them from the same row for nearly if not quite a month; and although they are good-sized beans inside of the pods, the pods are just as crisp and tender as at first. I do not know whether this is an improved variety, or what is the matter; but I do know that 10 cents' worth of seed has furnished beans almost daily for a large family, and we have had some to give away to the neighbors. I never saw any wax beans yield so well, and I never saw any before so excellent in quality, besides being exceedingly early. We shall most assuredly put them in our catalog next season. Of course, the ground was very rich, and there was a good "dust mulch" cultivation. They are certainly an improvement on wax beans in general. Oh, yes! just one thing more. There has never been a rusty pod in the patch.

THE COTTON OR BOLL WORM.

What can we do for corn that has worms in the end of the ear, among the silk, eating and spoiling the ear? I have never seen it mentioned, yet I know it's quite a common trouble. Mrs. JULIA S. CARMAN.

Granville, O., July 2, 1900.

The above was submitted to our Experiment Station, Wooster; and, in the absence of the entomologist, Prof. Green writes as follows:

Mr. A. I. Root:—I do not think any thing can be done to prevent it. I have frequently seen this worm on corn. It is known as the boll worm, and in the South infests the cotton as well as the corn.

Wooster, O., July 11, 1900.

W. J. GREEN.

In addition to the above, Prof. Webster writes:

The A. I. Root Co.:—The insect is the corn or boll worm, which works in the corn in the North and in the cotton-bolls in the South. They are not likely to do very much damage here in the North, and this largely to corn grown for culinary purposes.

Wooster, O., July 12, 1900.

F. M. WEBSTER.

While we have the thing in mind, perhaps I might give also the following from a recent number of the *Rural New-Yorker*:

F. B. Albany, Ga.—What remedy can I use on tomato-vines to prevent the worm which bores into the tomato, and at what stage should the remedy be applied?

Ans.—There is no satisfactory method of checking

the ravages of this cotton-boll worm, or corn worm, when it works in tomatoes; the only thing that can be done is to hand-pick and destroy the infested fruits. Some think that thorough cultivation of the soil in the fall will kill some of them in their hibernating stage in the soil. Perhaps they might be induced first to attack very early corn planted among the tomatoes. M. V. SLINGERLAND.

Permit me to add also from Bulletin No. 96, of the Ohio Experiment Station, the following:

The insect has been known in Ohio since 1845, and it is not likely to become much more destructive than it is at the present time. It is much more abundant some years than others.

Serious trouble has been reported among those who grow tomatoes in considerable areas, because of the larvæ eating into and destroying the green and ripening fruit. In such cases it is always best not to plant tomatoes close to corn, but, when possible, on ground that has been fall or winter plowed.

I may add, also, on my own hook, that our tomato-book recommends that those who grow tomatoes largely for canning-factories should keep a flock of young turkeys, and train them to go through the tomato fields regularly, for they will "gobble up" all sorts of large green worms that eat both the vine and fruit.

Humbugs and Swindles.

OFFICE OF
VOLUNTARY METEOROLOGICAL OBSERVER,
U. S. WEATHER BUREAU.

Mr. Root:—Here is another humbug ad't for you. You will confer a great favor upon your readers by airing it, as you so often do such things.

Ozark, Ark., July 2, 1900.

W. W. ADAMS.

A CHANCE TO MAKE MONEY.

I have berries, grapes, and peaches a year o'd, fresh as when picked. I used the California Cold Process. Do not heat or eat the fruit just put it up cold, keeps perfectly fresh and costs almost nothing: can put up a bu. bel in ten minutes. Last year I sold directions to over 120 families in one week; any one will pay a dollar for directions when he sees the beautiful samples of fruit. As there are many people poor like myself, I consider it my duty to give my experience to such, and feel confident any one can make one or two hundred dollars around home in a few days. I will mail a sample of fruit and full directions to any of your readers for nineteen cent stamps, which is only the actual cost of the complex postage, etc. Particulars free. Mrs. M. BAIRD, 3433 Laclede Ave., St. Louis, Mo.

[I at once sent the stamps, and received the following:]

DEAR FRIEND—Your communication is at hand. I enclose recipe, and send by same mail sample of fruit and let it they will benefit you as much as they did me since I first took up the business. I also enclose circulars and terms to agents from the California Fruit and Chemical Company, from where you can get your start. I think you can make big money by taking the agency for your section. I have made as much as \$20.00 per day. The recipes and salyx are lovely to sell. It is real interesting after you get a little used to it. You can sell a recipe in almost every house. Order your outfit direct from the California Fruit and Chemical Company. All the stock they handle is first class, and they will treat you right in all your dealings with them. You need good samples of different varieties of fruit, as they will all you would fully in taking orders. The company is giving lovely premiums this year. Wishing you all success and assuring you that I will gladly aid you all I can, I remain, Sincerely, Mrs. M. BAIRD, St. Louis, Mo.

[Here is the great secret:]

Price \$1.00. Notice—Copyright secured. Any one printing, selling, or giving directions not obtained from us, or in any way conveying the information contained herein, without our consent, will be prosecuted to the full extent of the law.

DIRECTIONS FOR PRESERVING

Fruits, Vegetables, and Liquids, by California Cold Process.—As soon as convenient after picking, take fruit that is sound and clean (wash it if necessary), and pack it in jars or whatever vessel you wish to use. Put it in as closely as you can without injuring the fruit, as the more compact it is packed the less liquid it will take to cover it. Then take one two-ounce package Co. B Cold Extract of Salyx and fourteen pounds of sugar (coffee C is the best) and dissolve the salyx and sugar in three and a half gallons of hot water. See that it is all perfectly dissolved, then let it get cold, strain through flannel cloth, and pour on enough liquid to cover the fruit. You do not have to heat the fruit; it is simply fresh fruit kept fresh on scientific principles, without mechanical assistance. In the above manner you can keep all kinds of berries, currants, grapes, peaches, pears, and all pie-plant, or any thing in the fruit line. Currants and grapes you can put up without

picking from the stem if you wish; peaches or pears will keep equally well without being halved. Pie-plant when canned is very soft, almost liquid; but when put up cold is as hard and as fresh as when cut in the garden. The sugar makes the fruit sweet enough for table use; and the three and a half gallons of liquid will be sufficient to cover about twelve and a half gallons of fruit, so you see it is the cheapest as well as the best method known, as it does away with the use of cans, sealing-wax, and all the labor connected with canning fruit. One or two grains of salyx per quart will keep milk from souring.

CALIFORNIA FRUIT AND CHEMICAL CO.,
Manufacturers of Compound Extract of Salyx, etc.

Let us now turn back to GLEANINGS for 1893, page 563, July 15. One Bain, of New Concord, Ohio, advertised the same thing, and called it the "United States Salyx Co." Here is what Prof. Wiley said (in 1893) in regard to it:

"The compound extract of salyx" is the gorgeous title under which the modest salicylic acid is made to masquerade. . . . The value of the two-ounce box, sold at retail for \$2.50, is about 3 cts.

You will notice that Bain used to charge \$2.50 for the three cents' worth. The Chemical Co., of St. Louis, charge only \$1.00 for that much. Well, that is not all. It has been so well settled of late that salicylic acid is really a deleterious drug, if I am not mistaken, there is a law against using it for preserving fruit, milk, or any thing else. In view of this, can not the United States postal authorities stop this "Mrs. Baird" and the Chemical Co. from doing business through the United States mails? I am going to see what I can do about it, and I wish the readers of GLEANINGS would notify the editors of their family papers they do not care to take a paper that consents to boom such pernicious frauds.

Tobacco Column.

CIGARETTE SMOKERS.

The Southern railway system in South Carolina has given a harder blow to the cigarette fiend than all the moral suasion of philanthropists and scientists combined could give. It demands that all employees who now smoke cigarettes must either quit smoking them or lose their positions; and that in the future no one who is a cigarette-smoker will be employed by the company. Railways all over the country refuse to employ men in any capacity of trust who drink. Business men are coming to make the same distinction in all positions that require clear heads and accuracy. When bright young men realize that it isn't an indication of manliness to drink, and smoke cigarettes, and that these habits slam the door on opportunities for engaging in the highest forms of productive labor, they will be quick enough to abandon habits that entail so much misery.—*Farm and Fireside.*

Good for the Southern railways! When the chief of the Weather Bureau took the stand he did he was, to some extent, standing alone; but when the great railways back him up, and even go much further than he did, and manufacturing industries, too, we shall have some pretty wholesome laws in regard to the matter. And, by the way, something comes in here a little queer. The manufacturers of cigarettes have loudly insisted that their goods were made entirely of tobacco, and nothing else, and they challenge our chemists to find any thing else in their composition. The United States Chemist has also said, by the way, that he did not know of any thing more dangerous, to the youth especially, than tobacco *itself*, and I am glad we have so wise a man as the Chemist of the United

States. But now to the point: If cigarettes are pure tobacco, and nothing more, why should not the Weather Bureau, the railway companies, etc., rule out pipes and cigars in the same way? Either tobacco itself is exceedingly bad, or else cigarettes contain some deadlier drug than tobacco.

PROGRAM OF THE THIRTY-FIRST ANNUAL CONVENTION OF THE NATIONAL BEE-KEEPERS' ASSOCIATION.

To be Held at Chicago, Illinois, Tuesday, Wednesday, and Thursday, August 28, 29, and 30, 1900; Sessions to be Held in Wellington Hall, 70 No. Clark Street.

TUESDAY EVENING.

Call to order at 7 o'clock.

Song, - - - Dr. C. C. Miller, Marengo, Ill.
"How to Sell Honey," S. A. Niver, Auburn, N. Y.
"Bee-keeping in the City," L. Kreutzinger, Chicago.
Question-box.

WEDNESDAY MORNING.—9.30.

Song.

Invocation.

President's Address, - - E. R. Root, Medina, O.
"Queen-Rearing by the Doolittle Method," - -
- - - Mrs. H. C. Acklin, St. Paul, Minn.

Question-box.

WEDNESDAY AFTERNOON.—1.30.

Song.

"Bee-keepers' Rights and Their Protection by Law," - Herman F. Moore, Park Ridge, Ill.
"Trials of the Commission Man," - - -
- - - R. A. Burnett, Chicago, Ill.

Question-box.

WEDNESDAY EVENING.—7.30.

"Breeding for Longer-tongued Bees," by J. M. Rankin, of the Michigan Experiment Station.
"Bee-keepers I have Met and Apiaries I have Visited," by E. R. Root, assisted by Dr. C. C. Miller, Dr. A. B. Mason, E. T. Abbott, and others.
Illustrated by a stereopticon.

THURSDAY MORNING.—9.30.

Song.

Invocation.

"Various forms of Disease Among Bees, Cause and Cure," Dr. Wm. K. Howard, Ft. Worth, Tex.
Report of General Manager.

Hon. Eugene Secor, Forest City, Ia.
"Pure Food Legislation," - - -
- - - Rev. E. T. Abbott, St. Joseph, Mo.

Question-box.

THURSDAY AFTERNOON.—1.30

Song.

"Chemistry of Honey, and How to Detect Its Adulteration," by Thomas Wm. Cowan, Pacific Grove, California.

"How to Ship Honey to Market, and in What Kind of Packages," - Geo. W. York, Chicago, Ill.

Question-box.

THURSDAY EVENING.

"Co-operative Organization Among Bee-keepers," - - - R. C. Aikin, Loveland, Col.

"My Trip Through Wisconsin and Minnesota," W. Z. Hutchinson, Flint, Mich. Illustrated by a stereopticon.

Unfinished business.

One prominent feature of the next convention will be the stereopticon work. Messrs. Root and Hutchinson, with a powerful stereopticon, will project upon the screen some photos they have taken of apiaries they have visited in various portions of the United States. The convention will be held in Wellington Hall, 70 North Clark St., about a block and a half from the office of the *American Bee Journal*, and about five blocks directly north of the Court-house. The hotels at which delegates may secure lodging is the Revere House, about half a block from the convention hall. The rate for lodging will be 50 cts. per night, and the proprietor has assured Mr. York that good beds are provided, but that several will have to occupy the same room. But when any one desires a room

with a single bed, the charge will be \$2.00 per night. If two men wish to take a single room in that way they can do it, sharing the expense between them. G. A. R. people will have to pay 75 cts. per night for a single bed, so bee-keepers are specially favored at 50 cts. The hotel is almost within a stone's throw of the convention hall, and right near the hall are first-class restaurants where meals can be secured at reasonable rates.

It is a little too early yet to announce what the railroad rates will be during G. A. R. week; but it is assumed that they will be low, probably a cent a mile each way.

Chicago is a central point, and there will undoubtedly be a large attendance; and, considering the attractions, it is earnestly hoped that bee-keepers will turn out in good strong force.

E. R. Root, President.

DR. A. B. MASON, Secretary.



WANTED, COMB AND EXTRACTED HONEY.

Send us full particulars of what you have to offer, and name lowest price on board cars at your station.

PATHFINDER BICYCLES.

We can still furnish these wheels, Ladies' or Gents' models, as described on page 545, July 1. If you have honey or wax to exchange for one of these wheels we can use either.

PREMIUM QUEENS.

The call for these has been so great that we have not been able to get them all mailed as early as we expected. We expect to complete all orders for these by August 4th at the latest.

SECOND-HAND COMB-FOUNDATION MILLS.

We have a number of these mills. Write for description and prices. If you say what size of mill and grade of foundation is wanted we will send you sample of foundation made on the mills we offer.

TOBACCO DUST.

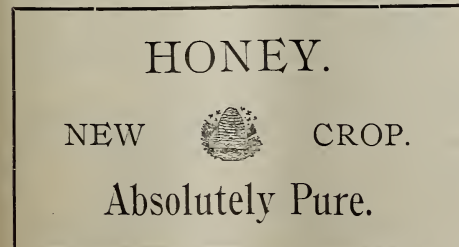
We have just secured a very fine lot of tobacco dust. Although this cost us considerably more than heretofore we furnish it at our usual prices. Send in your order and secure some of this for it is a fine lot; 1 lb., postpaid, 20c; 10 lbs. by express, 25c; 25 lbs., 50c; 100 lbs., \$1.50.

OUR PREMIUM LIST.

We are preparing our premium offers for new subscriptions, and shall have something attractive to offer soon. If you want to get an A. B. C. of Bee Culture, fountain pen, watch, camera, or bicycle you should read our offers. Although the list will not be ready before September 1st we shall be pleased to have all who want to solicit subscriptions for GLEANINGS send request at once for premium list. If you have in mind some other premium you would like to work for, let us know what it is.

DISPLAY CARDS FOR HONEY.

We have just got out a new card to be placed in stores where honey is sold, wording as follows:



Printed on cardboard, size 6½x8½ inches. We can

furnish these in packages of 10 for 10 cts. postpaid. Any number additional 1 cent each. Not less than 10 furnished. Put one of these in each store where your honey is sold and see the result.

Special Notices by A. I. Root.

POTTED STRAWBERRY-PLANTS IN JADOO FIBER.

We have had no complaint that these plants did not arrive fresh and bright, and no complaint that they did not stay so, even when put right in the sun, without wilting. But we have had two complaints to the effect that the plants in jadoo fiber did not take hold and put out runners as well as plants potted in heavy soil. It really ought to be just the other way; therefore we should like to have just as many as possible tell us on a postal whether our potted plants have been a success. Every plant ought to send roots out into the soil at once, produce runners, and be ready to give a good crop next season, especially if planted in the summer months.

IMPROVED WINTER RYE.

Inasmuch as turning under rye is a very important part in our rotation for potato growing, I thought a year ago last fall I would try to get hold of the best strains of rye that could be had. I sent to Henderson, Thorburn, and one other seedsman, for a small quantity of the latest improvement in winter rye. I think I had half a pint of each of the three kinds. Two of them were the Thousandfold and the Excelsior, and the third I have forgotten. I did not get at my experiment until so late the ground froze immediately after sowing the rye. However, it came up all right, and the next spring we gave the rows cultivation so as to get the largest amount of seed possible. Of course, we put these little lots a good deal further apart than ordinarily. All three kinds made a tremendous growth. They had the longest heads and the largest kernels I ever saw in my life for rye; and, strange to tell, nobody could tell one sample from another. They were all superior to any rye we had ever seen, and were all just alike. I do not know whether it was the choice variety of the rich ground and cultivation. Any way, we got a little over half a bushel of large plump grains. A year ago it was sown after early potatoes on about an acre of ground, and gave us about 30 bushels of very nice rye; but the grains are very little if any larger than the average rye in the market. I do not know whether this strain is superior to ordinary rye or not. It seems to stool rather more, but this may be because I gave it more room than usual. The amount of straw was probably over two tons to the acre. Now, if any of the friends want some of this rye they may have it at \$1.00 a bushel. I do not know what to call it and I am not positive that it is greatly if any superior to the average winter rye. But it is clean seed, and nice plump grains.

WAR IN CHINA,

but in our large apiary of 500 colonies peace reigns supreme. You should try one of our *Warranted Superior Italian Honey Queens*, which we will sell for the next 60 days at 50 cts. each. These queens are usually sold at \$1.00 each; but this special offer is to introduce one queen in each apiary in this country.

LEININGER BROS.,
Fort Jennings, O.

Italian Queens.

guaranteed.

Tested, \$1.00 each;
untested, 50 cents
each. Satisfaction

E. W. HAAG, Canton, O.

ITALIAN BEES and QUEENS FOR SALE

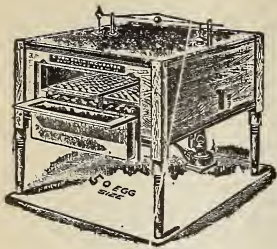
Queens, \$1.00; bees, by the pound, \$1.00; nuclei, two frames, with queen, \$2.00; one frame, \$1.50; full colonies, \$4.00.

MRS. A. A. SIMPSON, Swarts, Pa.

25 Colonies Italian Bees For Sale Cheap. No disease, and in good condition; also S. C. Brown Leghorn cockerels, \$1.00 each.

H. M. MOYER, Shanesville, Pa.

Sharples Cream Separators—Profitable Dairying.

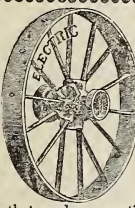


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That is what every one says of the **New C. Von Culin Incubator** (and Brooder). It has all the latest improvements which have been found of any merit. **Will Hatch Every Hatchable Egg.** Self-regulating, safe, sure. Send for illustrated catalog and price list of Incubators, Brooders, etc., free. Poultryman's Plans and catalog, 10 cts. Address

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Box M. Jamestown, N. Y.

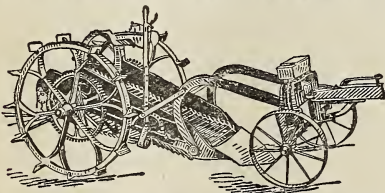
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of a low down wagon, such as ease of loading, saving of heavy lifting, saving the land from cutting up and rutting, are derived from using a set of **Electric Steel Wheels**. They convert your old wagon into a low down handy wagon at the lowest possible cost. They are made of steel with either direct or staggered oval steel spokes. They are made in sizes to fit any wagon. A set of these wheels means that you have practically two wagons—A low one for the farm and a high one for the roads. Any height you want, and all wide, non-rutting, easy draft tires. Write at once for catalogue, prices, etc.
Electric Wheel Co. Box 95, Quincy, Ill.

DON'T DIG Potatoes by Hand.

It is a slow and expensive way. The cheapest, quickest, and easiest way is to **USE THE IMPROVED**



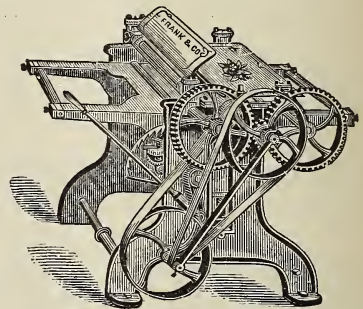
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DOWDEN MFG. CO., Box 23, Prairie City, Iowa.

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WANTED.—To sell 1000 combs in Simplicity heavy-top-bar wired frames, built from full sheets of fdn. 10, \$1.00; 100, \$9.50; 300 or over, 9c each. *No foul brood.* Would take a few first-class Belgian hares. Write.
H. P. LANGDON, East Constable, N. Y.

1200 FERRETS FOR SALE.
Small, medium, and large sized; some trained. **First-class stock.** New price list free.
N. A. KNAPP,
Rochester, Lorain County, Ohio.



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The above cut shows one of our small Planers, of which we make twelve different styles and sizes.


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By buying a poor fence that will let your stock fatten on his crops. The **KITSELMAN FENCE** is a satisfactory one. It insures good sleep and makes good neighbors. Free Catalogue telling how to make 100 Styles at the actual cost of the wire. Write to-day.
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